APPENDIX H – AGENCY CONSULTATION

Page intentionally blank

United States Fish and Wildlife Consultation (Alabama, Georgia, and Tennessee)

Page intentionally blank

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

November 4, 2009

Mr. Bill Pearson, Supervisor
U.S. Fish & Wildlife Service
Alabama Ecological Services Field Office
1208-B Main Street
Daphne, AL 36526

Dear Mr. Pearson:

The Tennessee Valley Authority (TVA) is proposing to construct and operate a single nuclear unit at the Bellefonte Nuclear Plant (BLNP) site in Jackson County, Alabama. This would be accomplished either by completing one of the existing partially built Babcock & Wilcox (B&W) nuclear units or by constructing a Westinghouse AP1000 nuclear unit. The Draft Supplemental Environmental Impact Statement (DSEIS) describing the environmental impacts of these two alternatives in detail will soon be mailed to your office for use in reviewing this project.

Existing TVA transmission lines in Bedford, Coffee, Sequatchie, Hamilton, and Marion Counties, Tennessee; Limestone, Jackson, and Morgan Counties, Alabama; and Catoosa, Walker, and Dade Counties, Georgia, would need upgrading in order to transmit the power generated at the nuclear plant. The enclosed Biological Assessment (BA) analyzes the impacts of single nuclear unit generation at BLNP site, including the associated transmission line upgrades. Some of the transmission lines originating on the BLNP site are presently de-energized. ROWs for these lines would be brought back to current TVA standards for energized lines. Associated right-of-way maintenance the other affected lines would not change based on this proposed project. Therefore, activities related to vegetation maintenance were not assessed in the enclosed BA.

Based on previous conversations with various offices of the U.S. Fish and Wildlife Service (F&WS), TVA will initiate a formal, programmatic Section 7 Endangered Species Act consultation on its right-of-way maintenance. This consultation would be completed before any transmission line upgrades associated with the generation of electricity at BLNP would be needed, and commitments resulting from the programmatic consultation would be incorporated in that work.

The DSEIS will not identify a preferred alternative. There is little difference in operation between the B&W and AP1000 nuclear units. Therefore, the enclosed BA assumes the most inclusive impacts of construction and operation to potentially-affected species.

Mr. Bill Pearson, Supervisor
Page 2
November 4, 2009

TVA has determined that completion or construction and operation of a single nuclear unit at BLNP site in Jackson County, Alabama, would not affect Hine's emerald dragonfly, Sequatchie caddisfly, orangefoot pimpleback, armored snail, royal marstonia, Alabama lampmussel, Alabama moccasinshell, birdwing pearlymussel, cracking pearlymussel, Cumberland monkeyface, Cumberland bean, Cumberland pigtoe, dromedary pearlymussel, fine-lined pocketbook, ring pink, spectaclecase, southern pigtoe, tan riffleshell, boulder darter, palezone shiner, and red-cockaded woodpecker. TVA has determined that the project is not likely to affect Anthony's riversnail, slender campeloma, pale lilliput, slabside pearlymussel, American hart's tongue fern, fleshy-fruit gladecress, green pitcher plant, large-flowered skullcap, leafy prairie-clover, Morefield's leather flower, Price's potato-bean, small whorled pogonia, Virginia spiraea, white fringeless orchid, slackwater darter, snail darter, gray bat, or bald eagle. TVA respectfully requests concurrence for these determinations.

TVA has determined that the project could adversely affect pink mucket and sheepnose (candidate for listing). The enclosed BA provides the details of impacts to these two mussel species from the proposed Bellefonte project. TVA requests that F&WS initiate formal Section 7 consultation for impacts to the pink mucket from this project. TVA requests initiation of formal conference for impacts to the sheepnose.

Sincerely,

Original signed by

Peggy W. Shute, Manager
Biological Permitting and Compliance
Office of Environment and Research

Enclosures
cc: Ms. Mary Jennings, Supervisor
U.S. Fish & Wildlife Service
Tennessee Field Office
446 Neal Street
Cookeville, TN 38501

Ms. Sandy Tucker, Field Supervisor
U.S. Fish & Wildlife Service
105 Westpark Drive, Suite D
Athens, GA 30606

Ms. Karen Marlow
Science Center, Room 229
Samford University
800 Lakeshore Drive
Birmingham, AL 35229-2234

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902-1499

November 4, 2009

Mr. Bill Pearson, Supervisor
U.S. Fish & Wildlife Service
Alabama Ecological Services Field Office
1208-B Main Street
Daphne, AL 36526

Dear Mr. Pearson:

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR A SINGLE NUCLEAR UNIT AT THE BELLEFONTE SITE— JACKSON COUNTY, ALABAMA

Enclosed are two draft copies of the draft SEIS, which evaluates Tennessee Valley Authority's (TVA) proposal to complete or construct and operate a single nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA is requesting your review of the draft SEIS and is accepting comments between November 13 and December 28, 2009.

TVA is considering a No Action Alternative and two Action Alternatives: completion and operation of a Babcock and Wilcox pressurized light water reactor or construction and operation of a Westinghouse AP1000 advanced pressurized light water reactor. Either of the two Action Alternatives would use licensing processes that are already underway. The draft SEIS also evaluates the impact of refurbishing, reenergizing, and upgrading existing electrical transmission infrastructure necessary to accommodate new power generation.

TVA has identified the need for additional base load generation in the 2018 to 2020 time frame. Completion or construction of one additional nuclear unit capable of generating between approximately 1,100 and 1,200 megawatt (MW) of power within this time frame would help address the need for additional base load generation in the TVA power service area and help meet TVA's goal to have at least 50 percent of its generation portfolio comprised of low or zero carbon-emitting sources by the year 2020. Both Action Alternatives proposed would also make beneficial use of existing assets at the BLN site.

This draft SEIS supplements TVA's original 1974 *Final Environmental Statement – Bellefonte Nuclear Plant Units 1 and 2* for the BLN project and updates other related environmental documents including a 2008 environmental report for the AP1000 for BLN Units 3 and 4. TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public.

Mr. Bill Pearson, Supervisor
November 4, 2009
Page 2

The draft SEIS may be viewed at www.tva.gov/environment/reports/blnp, and comments may be provided to us online. Please note that any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection. To provide written comments or request a printed copy of the draft SEIS, please contact:

Ruth M. Horton
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, TN 37902

Phone: (865) 632-3719
E-mail: rmhorton@tva.gov.

Also, for general project information, contact:

Andrea L. Sterdis
Nuclear Project Manager
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, TN 37402

Phone: (423) 751-7119
E-mail: alsterdis@tva.gov

Sincerely,

Original signed by

Peggy W. Shute, Manager
Biological Permitting and Compliance
Office of Environment and Research

Enclosures

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902-1499

November 4, 2009

Ms. Mary E. Jennings, Supervisor
U.S. Fish & Wildlife Service
Tennessee Field Office
446 Neal Street
Cookeville, TN 38501

Dear Ms. Jennings:

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR A SINGLE NUCLEAR UNIT AT THE BELLEFONTE SITE— JACKSON COUNTY, ALABAMA

Enclosed are two draft copies of the draft SEIS, which evaluates Tennessee Valley Authority's (TVA) proposal to complete or construct and operate a single nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA is requesting your review of the draft SEIS and is accepting comments between November 13 and December 28, 2009.

TVA is considering a No Action Alternative and two Action Alternatives: completion and operation of a Babcock and Wilcox pressurized light water reactor or construction and operation of a Westinghouse AP1000 advanced pressurized light water reactor. Either of the two Action Alternatives would use licensing processes that are already underway. The draft SEIS also evaluates the impact of refurbishing, reenergizing, and upgrading existing electrical transmission infrastructure necessary to accommodate new power generation.

TVA has identified the need for additional base load generation in the 2018 to 2020 time frame. Completion or construction of one additional nuclear unit capable of generating between approximately 1,100 and 1,200 megawatt (MW) of power within this time frame would help address the need for additional base load generation in the TVA power service area and help meet TVA's goal to have at least 50 percent of its generation portfolio comprised of low or zero carbon-emitting sources by the year 2020. Both Action Alternatives proposed would also make beneficial use of existing assets at the BLN site.

This draft SEIS supplements TVA's original 1974 *Final Environmental Statement – Bellefonte Nuclear Plant Units 1 and 2* for the BLN project and updates other related environmental documents including a 2008 environmental report for the AP1000 for BLN Units 3 and 4. TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public.

Ms. Mary E. Jennings, Supervisor
November 4, 2009
Page 2

The draft SEIS may be viewed at www.tva.gov/environment/reports/blnp, and comments may be provided to us online. Please note that any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection. To provide written comments or request a printed copy of the draft SEIS, please contact:

Ruth M. Horton
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, TN 37902

Phone: (865) 632-3719
E-mail: rmhorton@tva.gov.

Also, for general project information, contact:

Andrea L. Sterdis
Nuclear Project Manager
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, TN 37402

Phone: (423) 751-7119
E-mail: alsterdis@tva.gov

Sincerely,

Original signed by

Peggy W. Shute, Manager
Biological Permitting and Compliance
Office of Environment and Research

Enclosures

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902-1499

November 4, 2009

Ms. Sandy Tucker, Field Supervisor
U.S. Fish & Wildlife Service
105 Westpark Drive, Suite D
Athens, GA 30606

Dear Ms. Tucker:

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR A SINGLE NUCLEAR UNIT AT THE BELLEFONTE SITE— JACKSON COUNTY, ALABAMA

Enclosed is a copy of the draft SEIS, which evaluates Tennessee Valley Authority's (TVA) proposal to complete or construct and operate a single nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA is requesting your review of the draft SEIS and is accepting comments between November 13 and December 28, 2009.

TVA is considering a No Action Alternative and two Action Alternatives: completion and operation of a Babcock and Wilcox pressurized light water reactor or construction and operation of a Westinghouse AP1000 advanced pressurized light water reactor. Either of the two Action Alternatives would use licensing processes that are already underway. The draft SEIS also evaluates the impact of refurbishing, reenergizing, and upgrading existing electrical transmission infrastructure necessary to accommodate new power generation.

TVA has identified the need for additional base load generation in the 2018 to 2020 time frame. Completion or construction of one additional nuclear unit capable of generating between approximately 1,100 and 1,200 megawatt (MW) of power within this time frame would help address the need for additional base load generation in the TVA power service area and help meet TVA's goal to have at least 50 percent of its generation portfolio comprised of low or zero carbon-emitting sources by the year 2020. Both Action Alternatives proposed would also make beneficial use of existing assets at the BLN site.

This draft SEIS supplements TVA's original 1974 *Final Environmental Statement – Bellefonte Nuclear Plant Units 1 and 2* for the BLN project and updates other related environmental documents including a 2008 environmental report for the AP1000 for BLN Units 3 and 4. TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public.

Ms. Sandy Tucker, Field Supervisor
November 4, 2009
Page 2

The draft SEIS may be viewed at www.tva.gov/environment/reports/blnp, and comments may be provided to us online. Please note that any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection. To provide written comments or request a printed copy of the draft SEIS, please contact:

Ruth M. Horton
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, TN 37902

Phone: (865) 632-3719
E-mail: rmhorton@tva.gov.

Also, for general project information, contact:

Andrea L. Sterdis
Nuclear Project Manager
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, TN 37402

Phone: (423) 751-7119
E-mail: alsterdis@tva.gov

Sincerely,

Original signed by

Peggy W. Shute, Manager
Biological Permitting and Compliance
Office of Environment and Research

Enclosures

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902-1499

November 4, 2009

Ms. Karen Marlow
U.S. Fish and Wildlife Service
Science Center, Room 229
Samford University
800 Lakeshore Drive
Birmingham, AL 35229-2234

Dear Ms. Marlow:

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR A SINGLE NUCLEAR UNIT AT THE BELLEFONTE SITE— JACKSON COUNTY, ALABAMA

Enclosed is a copy of the draft SEIS, which evaluates Tennessee Valley Authority's (TVA) proposal to complete or construct and operate a single nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA is requesting your review of the draft SEIS and is accepting comments between November 13 and December 28, 2009.

TVA is considering a No Action Alternative and two Action Alternatives: completion and operation of a Babcock and Wilcox pressurized light water reactor or construction and operation of a Westinghouse AP1000 advanced pressurized light water reactor. Either of the two Action Alternatives would use licensing processes that are already underway. The draft SEIS also evaluates the impact of refurbishing, reenergizing, and upgrading existing electrical transmission infrastructure necessary to accommodate new power generation.

TVA has identified the need for additional base load generation in the 2018 to 2020 time frame. Completion or construction of one additional nuclear unit capable of generating between approximately 1,100 and 1,200 megawatt (MW) of power within this time frame would help address the need for additional base load generation in the TVA power service area and help meet TVA's goal to have at least 50 percent of its generation portfolio comprised of low or zero carbon-emitting sources by the year 2020. Both Action Alternatives proposed would also make beneficial use of existing assets at the BLN site.

This draft SEIS supplements TVA's original 1974 *Final Environmental Statement – Bellefonte Nuclear Plant Units 1 and 2* for the BLN project and updates other related environmental documents including a 2008 environmental report for the AP1000 for BLN Units 3 and 4. TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public.

Ms. Karen Marlow
November 4, 2009
Page 2

The draft SEIS may be viewed at www.tva.gov/environment/reports/blnp, and comments may be provided to us online. Please note that any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection. To provide written comments or request a printed copy of the draft SEIS, please contact:

Ruth M. Horton
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, TN 37902

Phone: (865) 632-3719
E-mail: rmhorton@tva.gov.

Also, for general project information, contact:

Andrea L. Sterdis
Nuclear Project Manager
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, TN 37402

Phone: (423) 751-7119
E-mail: alsterdis@tva.gov

Sincerely,

Original signed by

Peggy W. Shute, Manager
Biological Permitting and Compliance
Office of Environment and Research

Enclosures

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902-1499

November 4, 2009

Ms. Cynthia Dohner
Southeast Regional Director
U.S. Fish and Wildlife Service
1875 Century Boulevard, Suite 400
Atlanta, GA 30345

Dear Ms. Dohner:

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR A SINGLE NUCLEAR UNIT AT THE BELLEFONTE SITE— JACKSON COUNTY, ALABAMA

Enclosed is a copy of the draft SEIS, which evaluates Tennessee Valley Authority's (TVA) proposal to complete or construct and operate a single nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA is requesting your review of the draft SEIS and is accepting comments between November 13 and December 28, 2009.

TVA is considering a No Action Alternative and two Action Alternatives: completion and operation of a Babcock and Wilcox pressurized light water reactor or construction and operation of a Westinghouse AP1000 advanced pressurized light water reactor. Either of the two Action Alternatives would use licensing processes that are already underway. The draft SEIS also evaluates the impact of refurbishing, reenergizing, and upgrading existing electrical transmission infrastructure necessary to accommodate new power generation.

TVA has identified the need for additional base load generation in the 2018 to 2020 time frame. Completion or construction of one additional nuclear unit capable of generating between approximately 1,100 and 1,200 megawatt (MW) of power within this time frame would help address the need for additional base load generation in the TVA power service area and help meet TVA's goal to have at least 50 percent of its generation portfolio comprised of low or zero carbon-emitting sources by the year 2020. Both Action Alternatives proposed would also make beneficial use of existing assets at the BLN site.

This draft SEIS supplements TVA's original 1974 *Final Environmental Statement – Bellefonte Nuclear Plant Units 1 and 2* for the BLN project and updates other related environmental documents including a 2008 environmental report for the AP1000 for BLN Units 3 and 4. TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public.

Ms. Cynthia Dohner
November 4, 2009
Page 2

The draft SEIS may be viewed at www.tva.gov/environment/reports/blnp, and comments may be provided to us online. Please note that any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection. To provide written comments or request a printed copy of the draft SEIS, please contact:

Ruth M. Horton
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, TN 37902

Phone: (865) 632-3719
E-mail: rmhorton@tva.gov.

Also, for general project information, contact:

Andrea L. Sterdis
Nuclear Project Manager
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, TN 37402

Phone: (423) 751-7119
E-mail: alsterdis@tva.gov

Sincerely,

Original signed by

Peggy W. Shute, Manager
Biological Permitting and Compliance
Office of Environment and Research

Enclosures

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902-1499

November 4, 2009

Mr. Dwight Cooley, Field Supervisor
U.S. Fish and Wildlife Service
2700 Refuge Headquarters Road
Decatur, AL 35603

Dear Mr. Cooley:

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR A SINGLE NUCLEAR UNIT AT THE BELLEFONTE SITE— JACKSON COUNTY, ALABAMA

Enclosed is a copy of the draft SEIS, which evaluates Tennessee Valley Authority's (TVA) proposal to complete or construct and operate a single nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA is requesting your review of the draft SEIS and is accepting comments between November 13 and December 28, 2009.

TVA is considering a No Action Alternative and two Action Alternatives: completion and operation of a Babcock and Wilcox pressurized light water reactor or construction and operation of a Westinghouse AP1000 advanced pressurized light water reactor. Either of the two Action Alternatives would use licensing processes that are already underway. The draft SEIS also evaluates the impact of refurbishing, reenergizing, and upgrading existing electrical transmission infrastructure necessary to accommodate new power generation.

TVA has identified the need for additional base load generation in the 2018 to 2020 time frame. Completion or construction of one additional nuclear unit capable of generating between approximately 1,100 and 1,200 megawatt (MW) of power within this time frame would help address the need for additional base load generation in the TVA power service area and help meet TVA's goal to have at least 50 percent of its generation portfolio comprised of low or zero carbon-emitting sources by the year 2020. Both Action Alternatives proposed would also make beneficial use of existing assets at the BLN site.

This draft SEIS supplements TVA's original 1974 *Final Environmental Statement – Bellefonte Nuclear Plant Units 1 and 2* for the BLN project and updates other related environmental documents including a 2008 environmental report for the AP1000 for BLN Units 3 and 4. TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public.

Mr. Dwight Cooley, Field Supervisor
November 4, 2009
Page 2

The draft SEIS may be viewed at www.tva.gov/environment/reports/blnp, and comments may be provided to us online. Please note that any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection. To provide written comments or request a printed copy of the draft SEIS, please contact:

Ruth M. Horton
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, TN 37902

Phone: (865) 632-3719
E-mail: rmhorton@tva.gov.

Also, for general project information, contact:

Andrea L. Sterdis
Nuclear Project Manager
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, TN 37402

Phone: (423) 751-7119
E-mail: alsterdis@tva.gov

Sincerely,

Original signed by

Peggy W. Shute, Manager
Biological Permitting and Compliance
Office of Environment and Research

Enclosures

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

DEC 0 7 2009

IN REPLY REFER TO:
2006-F-1022(a)

Peggy W. Shute
Biological Permitting and Compliance
Office of Environment and Research
400 West Summit Hill Drive, WT 11C
Knoxville, TN 37901-1401

Dear Ms. Shute:

This letter acknowledges the U.S. Fish and Wildlife Service's (Service) November 6, 2009, receipt of your November 4, 2009, biological assessment and letter requesting initiation of formal section 7 consultation under the Endangered Species Act (Act). The consultation concerns the possible effects of the Tennessee Valley Authority's (TVA) proposed construction and operation of a single nuclear unit at the Bellefonte Nuclear Plant site in Jackson County, Alabama, on the endangered pink mucket pearlymussel (*Lampsilis abrupta*) and the sheepnose mussel (*Plethobasus cyphyus*), a candidate for listing under the Act.

TVA is considering either the completion of an existing, partially built Babcock & Wilcox nuclear unit, or the construction of a new Westinghouse AP1000 nuclear unit and has not yet identified a preferred alternative in the biological assessment and draft supplemental environmental impact statement (SEIS). We understand that TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public. As discussed and agreed upon in our November 24, 2009, conference call, the Service will address the possible effects of each of the proposed alternatives in our consultation with TVA.

We concur with your determination that the proposed project will not affect the following endangered (E) threatened (T), and candidate (C) species:

Alabama lampmussel (*Lampsilis virescens*) - E
Alabama moccasinshell (*Medionidus acutissimus*) - T
Armored snail (*Marstonia* (=*Pyrgulopsis*) *pachyta*) - E
Birdwing pearlymussel (*Lemiox rimosus* (= *Conradilla caelata*)) - E
Boulder darter (*Etheostoma wapiti*) - E
Cracking pearlymussel (*Hemistena lata*) – E
Cumberland bean pearlymussel (*Villosa trabalis*) - E
Cumberland monkeyface pearlymussel (*Quadrula intermedia*) - E
Cumberland pigtoe (*Pleurobema gibberum*) - E

www.fws.gov
PHONE: 251-441-5181
TAKE PRIDE® IN AMERICA
FAX: 251-441-6222

Dromedary pearlymussel (*Dromus dromas*) - E
Fine-lined pocketbook (*Hamiota altilis*) - T
Hine's emerald dragonfly (*Somatochlora hineana*) – E
Orangefoot pimpleback pearlymussel (*Plethobasus cooperianus*) – E
Palezone shiner (*Notropis albizonatus*) -E
Red-cockaded woodpecker (*Picoides borealis*) - E
Ring pink (*Obovaria retusa*) - E
Royal (obese) marstonia snail (*Marstonia ogmoraphe*) - E
Sequatchie caddisfly (*Glyphopsyche sequatchie*) – C
Southern pigtoe (*Pleurobema georgianum*) - E
Spectaclecase (*Cumberlandia monodonta*) – C
Tan riffleshell (*Epioblasma florentina walkeri* (=*E. walkeri*)) – E

Likewise, we concur with your finding that the proposed project may affect, but is not likely to adversely affect, the following species:

American hart's-tongue fern (*Asplenium scolopendrium* var. *americanum*) - T
Anthony's riversnail (*Athearnia anthonyi*) - E
Gray bat (*Myotis grisescens*) E
Green pitcher-plant (*Sarracenia oreophila*) - E
Large-flowered skullcap (*Scutellaria montana*) - E
Leafy prairie-clover (*Dalea* (=*Petalostemum*) *foliosa*) - E
Morefield's leather-flower (*Clematis morefieldii*) - E
Pale lilliput pearlymussel (*Toxolasma cylindrellus*) - E
Price's potato-bean (*Apios priceana*) - T
Slabside pearlymussel (*Lexingtonia dolabelloides*) - C
Slackwater darter (*Etheostoma boschungi*) - T
Slender campeloma (*Campeloma decampi*) - E
Small whorled pogonia (*Isotria medeoloides*) - T
Snail darter (*Percina tanasi*) - T
Unnamed gladecress (*Leavenworthia crassa*) - C
Virginia spiraea (*Spriraea virginiana*) - T
White fringeless orchid (*Platanthera integrilabia*) - C

All information required of you to initiate consultation on the possible effects of the proposed construction and operation of a single nuclear unit at the Bellefonte Nuclear Plant site in Jackson County, Alabama, on the endangered pink mucket pearlymussel (*Lampsilis abrupta*) and the sheepnose mussel (*Plethobasus cyphyus*) was either included with your letter or is otherwise accessible for our consideration and reference. We have assigned log number 2006-F-1022(a) to this consultation. Please refer to that number in future correspondence on this consultation.

Section 7 allows the Service up to 90 days to conclude formal consultation with your agency and an additional 45 days to prepare our biological opinion (unless we mutually agree to an extension). Therefore, we anticipate completing the consultation by February 4, 2010, and the biological opinion by March 22, 2010.

As a reminder, the Endangered Species Act requires that after initiation of formal consultation, the Federal action agency make no irreversible or irretrievable commitment of resources that limits future options. This practice insures agency actions do not preclude the formulation or implementation of reasonable and prudent alternatives that avoid jeopardizing the continued existence of endangered or threatened species or destroying or modifying their critical habitats.

If you have any questions or need additional information, please contact Ms. Karen Marlowe of my staff at (205) 726-2667. Please use the reference number located at the top of this letter in future phone calls or written correspondence.

Sincerely,

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

cc: USFWS, Ecological Services, Asheville, NC
USFWS, Ecological Services, Cookeville, TN
USFWS, Ecological Services, Jackson, MS
USFWS, Ecological Services, Frankfort, KY
USFWS, Ecological Services, Clemson, SC
USFWS, Ecological Services, Chicago, IL

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

JAN 21 2010

IN REPLY REFER TO:
2006-F-1022

Peggy W. Shute
Biological Permitting and Compliance
Office of Environment and Research
400 West Summit Hill Drive, WT 11C
Knoxville, TN 37901-1401

Dear Ms. Shute:

This letter follows up our December 7, 2009, acknowledgement of receipt of your November 4, 2009, biological assessment and letter requesting initiation of formal section 7 consultation under the Endangered Species Act of 1973, as amended (Act). In the course of our review of the Tennessee Valley Authority's (TVA) proposed construction and operation of a single nuclear unit at the Bellefonte Nuclear Plant site in Jackson County, Alabama, with associated transmission line upgrades and the proposed project's effects on the endangered pink mucket pearlymussel (*Lampsilis abrupta*) and candidate sheepnose mussel (*Plethobasus cyphyus*), we have concluded that there will be no effect to the sheepnose mussel.

The only record of a sheepnose in recent history anywhere near the Bellefonte site is the discovery of a single, old, weathered shell near the plant during the mussel and snail surveys that were conducted for the biological assessment (Charles Howard, pers. comm. 2010; Gerry Dinkins, pers. comm. 2009) and there are no records of the sheepnose upstream of Interstate 65 at Decatur, Alabama (Jeff Garner, pers. comm. 2010). We, therefore, intend to consult only on the effects of the proposed Bellefonte Nuclear Plant project on the endangered pink mucket pearlymussel. We continue to anticipate completing the consultation by February 4, 2010, and the biological opinion by March 22, 2010.

If you have any questions or need additional information, please contact Ms. Karen Marlowe of my staff at (205) 726-2667. Please use the reference number located at the top of this letter in future phone calls or written correspondence.

Sincerely,

William J. Pearson

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

www.fws.gov

PHONE: 251-441-5181

FAX: 251-441-6222

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902-1499

March 18, 2010

Mr. William J. Pearson, Field Supervisor
Alabama Ecological Services Field Office
U.S. Fish and Wildlife Service
1208-B Main Street
Daphne, AL 36526

Dear Mr. Pearson:

On November 4, 2009, the Tennessee Valley Authority (TVA) submitted a Biological Assessment (BA) and request for formal consultation (according to Section 7 of the Endangered Species Act) to your office for the TVA project entitled "Proposed Single Unit Nuclear Plant Development at Bellefonte Nuclear Site and Associated Transmission line upgrades, in Alabama, Tennessee, and Georgia" (USFWS ID: 2006-F-1022). As a result of the BA, TVA determined that the project was likely to adversely affect the federally-listed-as-endangered pink mucket pearlymussel (*Lampsilis abrupta*). After consultation with your office and further evaluation of the project's impacts to pink mucket, TVA has committed to additional protective measures that would help minimize the project's adverse impacts to pink mucket, which are in addition to measures and best management practices previously described in the BA.

Our evaluation of impacts determined that the project would directly affect 25,455 m^2 of mussel habitat and indirectly affect 89,876 m^2 of habitat in the Tennessee River within the intake channel, overbank area near the intake channel, barge slip area, and effluent mixing zone (areas combined). Based on relative densities of mussels found within the action area and assumptions about the frequency of pink mucket, TVA determined that a total of five adult pink mucket could be directly taken via harm or kill and that 63 adult pink mucket could be indirectly taken via harm.

The effort and cost associated with translocating these mussels from the project area (even if restricted to areas of direct impacts only) to a suitable location within the Tennessee River and monitoring their health would be extraordinary, especially when considering the relative benefit to the species and generally poor or marginal habitat for pink mucket (and most other unionid mussel species) within the proposed action area. Therefore, in lieu of translocation as a protective measure, TVA would commit to funding other conservation actions aimed to recover pink mucket and its habitat.

To determine an appropriate amount of funding for this proposed Bellefonte project, we compared the potential adverse impacts of the proposed project with impacts from a recently permitted project for a barge loading facility at Tennessee River mile 424 upstream from the Bellefonte Nuclear Plant site at the head of Guntersville Reservoir (Biological Assessment: Proposed Fabrication and Loading Facility by Chicago Bridge

Mr. William J. Pearson, Field Supervisor
Page 2
March 18, 2010

and Iron [CBI] Company [Marion County, Tennessee], TVA 2008). For the CBI project, the applicant committed to $25,000 that would be used for pink mucket recovery. The applicants also committed to two years of post-construction mussel monitoring and reporting to identify project impacts within and adjacent to the CBI action area.

The proposed Bellefonte project would directly take fewer pink mucket than the CBI project (5 vs. 17 individuals, respectively), and indirectly take slightly fewer pink mucket (62 vs. 66 individuals, respectively). The proposed Bellefonte project would directly affect substantially more habitat than the CBI project (25,455 m^2 vs. 3,300 m^2). However, mussel habitat quality at the Bellefonte site, particularly in areas to be directly affected by dredging impacts, is relatively poor compared to habitat present at the CBI site. At the Bellefonte site, mussel density is 0.12 - 0.81 mussels/m^2 vs. 4.76 mussels/m^2 at the CBI site. TVA has taken into consideration both the area affected and the quality of the mussel habitat in developing its proposed mitigation.

TVA would commit a total of $30,000 to be used for research and recovery of pink mucket to mitigate impacts to the species that would result from constructing and operating a single nuclear unit at the Bellefonte Nuclear site. However, TVA does not stipulate the use of these monies for specific projects. If funding more general research evaluating impacts of water-based facilities (like the Bellefonte Nuclear site) to mussel habitats in the mainstem Tennessee River were of interest to the U.S. Fish and Wildlife Service, TVA would not object to this use of funds.

If you have questions about these additional commitments, please contact me or Chuck Howard at (865) 632-2092.

Sincerely,

Original signed by

Peggy W. Shute, Manager
Biological Permitting and Compliance
Endangered Species Act Compliance Officer
Office of Environment and Technology

Emailed copy provided to Karen Marlow, U.S.F&WS, Birmingham, AL

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

IN REPLY REFER TO:

APR 1 5 2010

2006-F-1022

Peggy W. Shute
Tennessee Valley Authority
Biological Permitting and Compliance
Office of Environment and Research
400 West Summit Hill Drive, WT 11C
Knoxille, TN 37901-1401

Dear Ms. Shute:

This document transmits the Fish and Wildlife Service's (Service) biological opinion based on the Service's review of the Tennessee Valley Authority's (TVA) proposed construction and operation of a single nuclear unit at the Bellefonte Nuclear Plant (BLN) site in Jackson County, Alabama, and its effects on the endangered pink mucket (pearlymussel) (*Lampsilis abrupta*) in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The proposed project includes associated transmission line upgrades in Bedford, Coffee, Sequatchie, Hamilton and Marion Counties, Tennessee; Limestone, Jackson and Morgan Counties, Alabama; and Catoosa, Walker and Dade Counties, Georgia. The November 4, 2009, request for formal consultation was received on November 6, 2009.

This biological opinion is based on information provided in the November 4, 2009, biological assessment (BA) titled *Biological Assessment: Proposed Single Unit Nuclear Plant Development at Bellefonte Nuclear Site and Associated Transmission Line Upgrades, Alabama, Tennessee, and Georgia*; the November 2009 draft Supplemental Environmental Impact Statement (SEIS); survey reports; available literature; and other sources of information. A complete administrative record of this consultation is on file in the Alabama Field Office located in Daphne, Alabama.

Consultation History

- July 17, 2006: NuStart Energy Development, LLC, (NuStart) wrote a letter to the Service's Daphne, Alabama, field office (Alabama FO) seeking information on threatened, endangered, and candidate species and habitats in and around the 1,600-acre Bellefonte site being considered for an advanced technology nuclear power plant.
- August 17, 2006: The Alabama FO wrote a response to NuStart providing a species list, recommending surveys, and requesting additional information on the proposed project.

www.fws.gov
PHONE: 251-441-5181
TAKE PRIDE IN AMERICA
FAX: 251-441-6222

- September 6, 2006: TVA wrote a letter to the Alabama FO, clarifying NuStart's role in the Nuclear Regulatory Commission (NRC) combined construction and operating license process for the Bellefonte plant site.
- November 6, 2006: Enercon Services, Inc., (Enercon) the environmental contractor for NuStart, called the Alabama FO requesting information on the State of Alabama's thermal limits and clarification on the surveys needed for the pink mucket and Anthony's riversnail (*Athearnia anthonyi*).
- January 21, 2007: Enercon acknowledged the Service's August 17, 2006, letter, to NuStart and provided further information in response to some of the Service's recommendations and concerns.
- February 1, 2007: A meeting at Wheeler National Wildlife Refuge between the Service, Enercon, and TVA was held to further discuss the Service's issues and concerns and Enercon's responses and data gathered to date.
- June 18, 2007: The Alabama FO received the aquatic mussel survey report from Mainstream Commercial Divers, Inc, the consultant hired by Enercon. Survey efforts found no threatened or endangered mussel species along any of the 22 transects.
- February 12, 2008: Enercon transmitted a winter plant habitat survey report to the Alabama FO, stating there was no habitat present within the project footprint for listed plants.
- February 26, 2008: In a telephone conversation with Enercon, the Alabama FO recommends surveys during the flowering/fruiting period for the threatened Price's potato-bean (*Apios priceana*) and endangered Morefield's leather flower (*Clematis morefieldii*).
- February 26, 2008: The NRC sent a letter to the Service's Regional Director in Atlanta, Georgia, requesting a list of protected species within the area under evaluation for the Bellefonte Nuclear Plant, Units 3 and 4 combined license application. The letter was received by the Alabama FO on November 18, 2008.
- December 22, 2008: The Alabama FO responded to the NRC, summarizing the past survey recommendations and results, and recommending surveys for the Price's potato-bean and Moorefield's leather flower during the flowering/fruiting period.
- August 27, 2009: A meeting between TVA and the Service was held in the Service's Cookeville, Tennessee, field office to discuss an appropriate process and timeline for conducting the endangered species section 7 consultation for the proposed Bellefonte Nuclear Plant project.
- October 1, 2009: A meeting between TVA and the Service was held in Birmingham, Alabama. The meeting was called by TVA to provide the Service with a summary of the proposed construction and operation of a nuclear unit at the Bellefonte Nuclear Power Plant and to discuss the upcoming release of the draft SEIS and submission of the BA.
- November 6, 2009: The Alabama FO receives TVA's BA and letter requesting initiation of formal consultation for the construction and operation of a single nuclear unit at Bellefonte Nuclear Plant and its effects on the endangered pink mucket (pearlymussel) and the candidate sheepnose mussel (*Plethobasus cyphyus*).

- November 23, 2009: The Alabama FO received the draft SEIS for a single nuclear unit at Bellefonte Nuclear Plant.
- November 24, 2009: A conference call between TVA and the Service was held to clarify the project alternative(s) to be addressed in the formal consultation.
- December 7, 2009: The Alabama FO sent a letter to TVA acknowledging receipt of the BA and initiating formal consultation.
- January 21, 2010: The Alabama FO sent a letter to TVA stating that, given the fact that there were no current records of the sheepnose within the project area, the proposed project would have no effect on this candidate species.
- March 1, 2010: The Alabama FO sent the draft biological opinion (BO) to TVA for review.
- March 18, 2010: TVA sent comments on the draft BO and revised the project description to include a commitment to provide $30,000 for research and recovery of pink mucket.
- April 1, 2010: Alabama FO staff met with TVA to discuss and flesh out the pink mucket recovery project to be included as part of the project description in the BO.

Table 1. Species and critical habitat evaluated for effects and those where the Service has concurred with a "not likely to be adversely affected" determination.

ENDANGERED (E), THREATENED (T), OR CANDIDATE (C) SPECIES or CRITICAL HABITAT	PRESENT IN ACTION AREA	PRESENT IN ACTION AREA BUT "NOT LIKELY TO BE ADVERSELY AFFECTED"
American hart's-tongue fern (*Asplenium scolopendrium* var. *americanum*) - T	Yes	Yes
Anthony's riversnail (*Athearnia anthonyi*) - E	Yes	Yes
Gray bat (*Myotis grisescens*) E	Yes	Yes
Green pitcher-plant (*Sarracenia oreophila*) - E	Yes	Yes
Large-flowered skullcap (*Scutellaria montana*) - E	Yes	Yes
Leafy prairie-clover (*Dalea* (=*Petalostemum*) *foliosa*) - E	Yes	Yes
Morefield's leather-flower (*Clematis morefieldii*) - E	Yes	Yes
Pale lilliput pearlymussel (*Toxolasma cylindrellus*) - E	Yes	Yes
Price's potato-bean (*Apios priceana*) - T	Yes	Yes
Slabside pearlymussel (*Lexingtonia dolabelloides*) -	Yes	Yes

C		
Slackwater darter (*Etheostoma boschungi*) - T	Yes	Yes
Slender campeloma (*Campeloma decampi*) - E	Yes	Yes
Small whorled pogonia (*Isotria medeoloides*) - T	Yes	Yes
Snail darter (*Percina tanasi*) - T	Yes	Yes
Unnamed gladecress (*Leavenworthia crassa*) - C	Yes	Yes
Virginia spiraea (*Spriraea virginiana*) - T	Yes	Yes
White fringeless orchid (*Platanthera integrilabia*) - C	Yes	Yes

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

This project description is taken from the BA and draft SEIS. The action evaluated in this consultation is TVA's proposed construction and operation of a single nuclear unit at the Bellefonte Nuclear Plant site in Jackson County, Alabama, with associated transmission line upgrades. TVA intends to either complete and operate one of the partially constructed Babcock & Wilcox (B&W) pressurized light water reactor units on the BLN site (BLN unit 1 or 2) or construct and operate a new Westinghouse AP1000 advanced pressurized light water reactor at the site. A preferred alternative has not yet been identified. TVA intends to identify its preferred alternative in the final SEIS for the proposed project. This consultation, therefore, addresses the possible effects of each of the proposed alternatives on the endangered pink mucket.

The **Action Area** (Figures 1 and 2) extends from approximately Tennessee River mile (TRM) 392.4 to TRM 390.8, and includes the 1,200-foot (ft) (366-meter (m)) long, 330-ft (101 m) wide intake channel connecting Guntersville Reservoir with the BLN intake pumping station; the mainstem river portion, or intake channel overbank, for which the effects of dredging will extend approximately 580 ft (177 m) out from the riverward boundary of the intake channel proper; the barge terminal, which is located in a small embayment along the right bank of the river at the downstream margin of the BLN site; and, the area (i.e., the mixing zone) within the Tennessee River that is expected to be directly and indirectly impacted by effluent (thermal and chemical) discharges from an existing two-pipe multiport diffuser located at the downstream margin of the barge terminal embayment and extending approximately 430 ft (131 m) into the river. The action area also includes the BLN site itself, located on the peninsula bounded by the Tennessee River and Town Creek at TRM 391.5, and the sites in

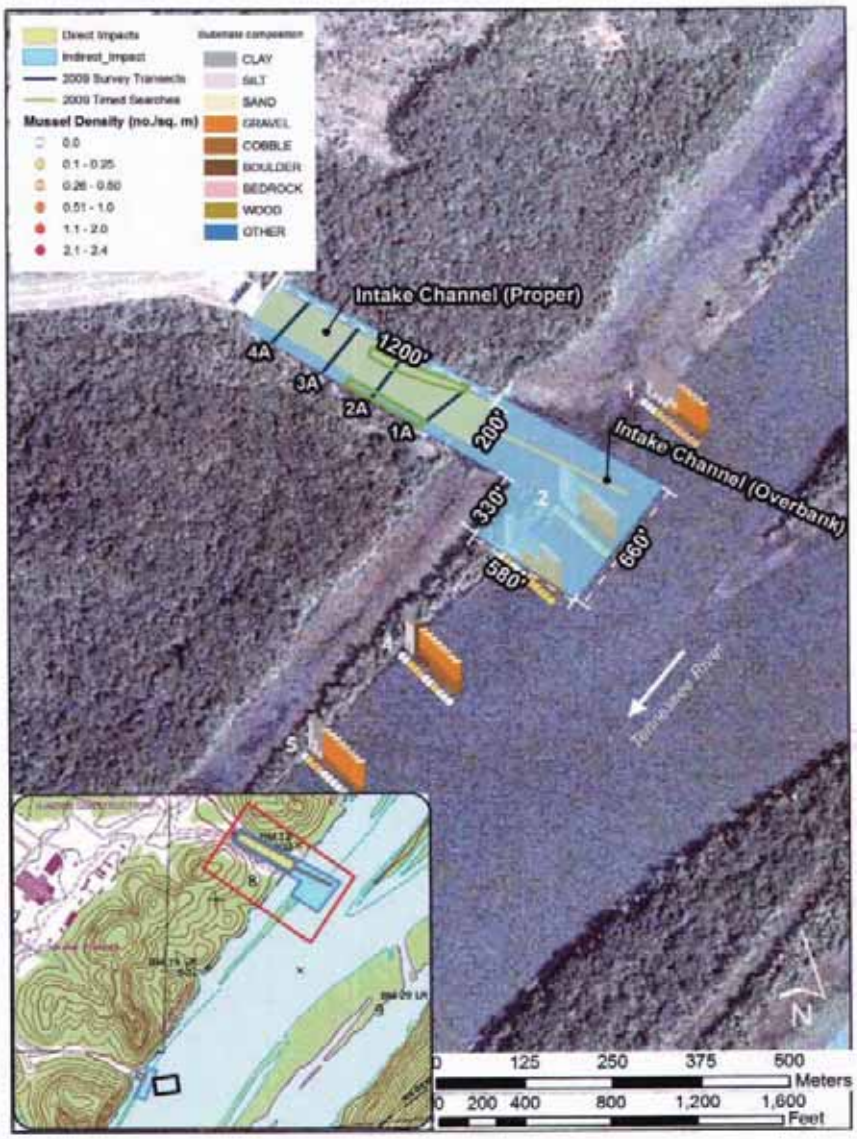

Figure 1. Intake channel and intake channel overbank.

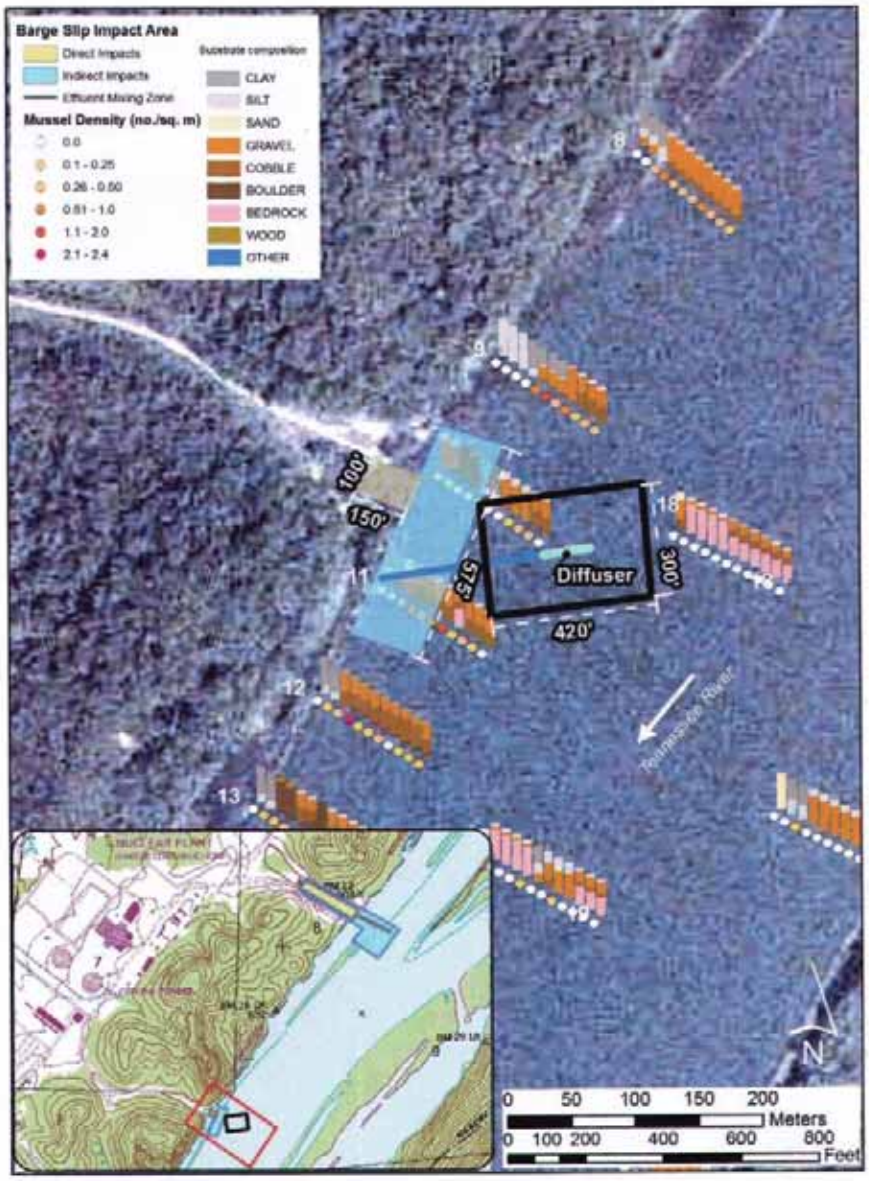

Figure 2. The mixing zone and barge terminal.

which transmission line upgrades are planned in association with the BLN construction and operation; however, as summarized in Table 1 (above), no endangered, threatened, or proposed species are likely to be adversely affected by the proposed construction activities on land at the BLN site and by the transmission line upgrades.

Dredging

Intake Channel

For both alternatives, dredging of the cooling water intake channel, which is located at the upstream boundary of the BLN site, will be necessary to remove fine sediments prior to the facility operation, along with maintenance dredging every 5-10 years. Approximately 10,000 cubic yards of dredged material will be removed from a 240,000 square foot (5.5 acre) area, from the pumping station to the trash boom (ca. 1,200 ft. or 366 m).

Intake Channel Overbank

For the B&W reactor, an additional 11,100 cubic yards of material will be removed from the trash boom to the main river channel (i.e., the intake channel overbank) (ca. 760 ft (232 m) long and 25 ft (7.62 m) wide), extending 580 ft (177 m) into the Tennessee River from the intake channel proper. Direct and indirect impacts from the intake channel and intake channel overbank dredging are expected to encompass an area extending from slightly upstream of the intake channel overbank to 330 ft (101 m) downstream.

Barge Unloading Dock

For both the B&W reactor and the AP1000 reactor, the unloading dock will be refurbished. No additional dredging at the barge unloading dock will be required for the B&W reactor; however, approximately 240 cubic yards of material will need to be dredged from an area in the embayment measuring approximately 150 ft (46 m) long and 100 ft wide (30.5 m) (=15,000 square ft or .34 acres) for the AP1000 reactor. Direct and indirect impacts from the dredging of the embayment for the AP1000 reactor are expected to extend from slightly upstream of the embayment to 330 ft (101 m) downstream.

All dredged material will be disposed of on-site in an approved area above the 500-year flood elevation.

Barge Traffic

Under both alternatives, barges will be used to transport heavy equipment, large reactor components, construction modules too large to ship by train, and removal of construction debris and other waste from the site.

Thermal and Chemical Discharges

The type of thermal and chemical discharges from the two-pipe multiport diffuser located at the downstream margin of the barge terminal embayment and extending approximately 430 ft (131 m) into the river channel will be similar for both the B&W reactor and the AP1000 reactor, although slightly reduced for the AP1000 reactor (i.e., the AP1000 discharge would be 36 percent of that associated with a B&W reactor). As permitted under BLN's NPDES permit number AL0024635, the discharges consist of cooling tower blowdown and other wastewater resulting from electric power generation. The discharge temperature limitations (92°/95° F or 33°/35°C) ensure that the temperature at the edge of the mixing zone will not exceed 90°F (32°C), the temperature considered protective of maintaining a balanced indigenous population of fish, shellfish, and aquatic life (ADEM 1998; TVA 1982). The mixing zone (i.e., the limits of where thermal and chemical effects from the diffuser would be felt) encompasses a 250-ft (76 m) radius from the diffuser in all directions (Figure 3).

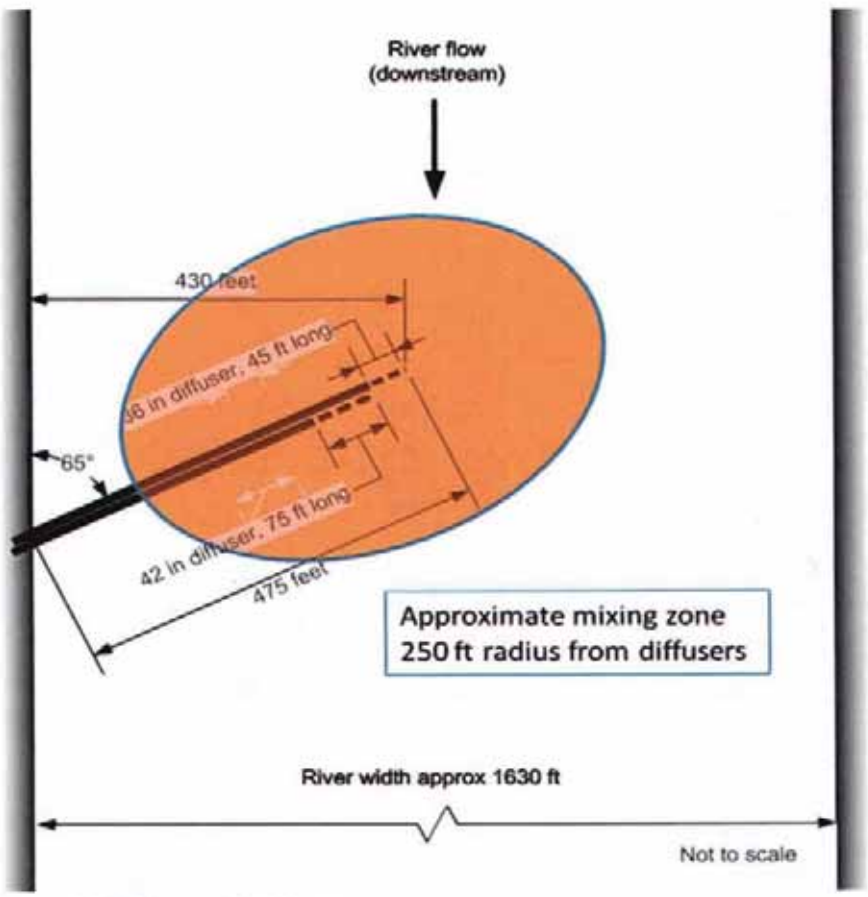

Figure 3. Diffuser and mixing zone

Conservation Measure Proposed as Part of the Action

In accordance with the Service's draft 5-year review (Service 2009) and recommendations for reintroduction and augmentation outlined in the draft "Plan for the Controlled Propagation, Augmentation and Reintroduction of Freshwater Mollusks of the Cumberlandian Region" prepared by the Cumberlandian Region Mollusk Restoration Committee (2009), TVA will provide $30,000 to the Alabama Aquatic Biodiversity Center (AABC) for the reintroduction and/or augmentation of pink mucket and other high priority mollusks within their historic ranges. The reintroduction/augmentation project will be funded by TVA prior to the initiation of dredging activities described above.

STATUS OF THE SPECIES/CRITICAL HABITAT

Listed species/critical habitat description

The pink mucket was listed as endangered without critical habitat on June 14, 1976 (41 FR 24062-24067). The preferred habitat of this species is in medium to large rivers in habitat ranging from silt to boulders, rubble, gravel, and sand substrates (Hickman 1937; Yokley 1972; Buchanan 1980; Clarke 1982, as cited in Service 1985). It is generally found in larger streams and rivers in moderate to fast-flowing water, at depths ranging from 1.5 to 26 ft (0.5 to 8.0 m) (Service 1985). Historically, it was known from the Tennessee, Cumberland, and Ohio River systems with occasional records from the Mississippi River system (Service 1985). Recent sampling efforts and a more thorough search of historical records documents historic populations in at least 48 streams (Service 2009). The species has become extirpated in at least 19 streams, and is currently known from only 29 streams within the Ohio, Cumberland, Tennessee, Missouri, Mississippi, White, and Red River systems (Service 2009). Over one-third of these populations are represented by only one or two individuals found over the past 25 years, and 16 populations (55%) are restricted to less than 16 river miles (Service 2009).

Life history

Like most naiads, male pink muckets release sperm into the water, where females downstream obtain the sperm through siphoning. Fertilization of the eggs occurs within the gills of the female. The female retains the fertilized eggs in the posterior section of the outer gills until they partially develop into a young life stage called glochidia. The glochidia are discharged into the water by the female either singly or in groups, depending on the species. Within three or four days, they must attach to a suitable fish host, encysting on gill filaments, opercles, or fins. If the glochidium is unsuccessful in attaching to the appropriate fish host, it will die. During the period of attachment to the host fish, which may last for several days or weeks depending on the species, the encapsulated glochidium develops into a juvenile mussel and drops from the host to begin growth on the stream bottom. Appropriate stream bottom habitat conditions must be present for the mussel to develop into an adult.

The pink mucket has been reported as gravid in August, September, October, November, and January (Gordon and Layzer 1989 and citations therein), with the glochidia overwintering and being released the following June (Service 1985). Host fish include largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), spotted bass (*Micropterus punctulatus*), and walleye (*Sander vitreus*) (Barnhart *et al.* 1997), as well as white crappie (*Pomoxis annularis*) and sauger (*Sander canadense*) (J.B. Layzer and L.M. Madison, USGS, pers. comm., in Williams *et al.* 2008).

Like most mussel species, the pink mucket is believed to be long-lived -- up to 50 years (Service 1985). A pond propagation study that took place in 2006 in the Tennessee River, Tennessee, indicates that female pink muckets reach sexual maturity at 2+ years of age (D.W. Hubbs, Tennessee Wildlife Resources Agency, pers. comm. 2009, in Service 2009).

Population dynamics

The pink mucket populations that remain are, with few exceptions, extremely small and occur in relatively short river reaches. Over one-third of the populations are represented by only one or two individuals found over the past ~25 years and 16 populations (55%) are restricted to ≤ 16 river miles (Service 2009).

Within the Ohio River in Ohio, West Virginia, Kentucky, and Illinois, the pink mucket occupies its largest stretch of river but individual records may be several hundred miles apart (Service 2009). The pink mucket in the Ohio River has been severely impacted by the invasive zebra mussel (*Dreissena polymorpha*), navigational activities, industrial pollution, and stochastic events, and appears to be in decline (Service 2009).

In the Kanawha River in West Virginia, the pink mucket occupies only ~5 RM, and appears to be stable (B. Douglas, Service, pers. comm. 2004 in Service 2009), with recruitment documented in 1999 (Douglas ca. 1999). In the Elk River, West Virginia, the population is considered to be non-recruiting (H.L. Dunn, Ecological Specialists Inc. (ESI), pers. comm. 2009 in Service 2009), and the status of this population is currently unknown (Service 2009).

In Kentucky, the pink mucket inhabits Licking River, Green River, and Barren River. Its status is unknown in Licking and Barren Rivers, and is declining in the Green River (Service 2009). In the Cumberland River of Tennessee, the pink mucket population is considered stable, although recruitment has not yet been verified (Service 2009).

The pink mucket population in the Tennessee River of Alabama, Tennessee, and Kentucky represents the best pink mucket population east of the Mississippi and is one of the top two rangewide (Service 2009). The species was historically distributed throughout the ~650 river mile (RM) main stem of the Tennessee River. It now occupies ~250 RMs of Tennessee River tailwaters downstream of Wilson and Guntersville Dams (Mirarchi *et al.*, 2004; Service 2009). There is evidence of recruitment and the population continues to improve in status in Guntersville (J.T. Garner, DCNR, pers. comm. 2009, in Service 2009) and Pickwick Landing tailwaters (D.W. Hubbs, TWRA, pers. comm. 2008, in Service 2009). The current status of

pink mucket populations elsewhere in Tennessee (Holston River, French Broad River, Clinch River) and Alabama (Paint Rock River and Bear Creek) is unknown (Service 2009).

In the Black and Spring Rivers of Arkansas and Missouri, recruitment is occurring (Hutson and Barnhart 2004; J.L. Harris, Arkansas Highway and Transport Department (AHTD), pers. comm. 2004, 2009 in Service 2009) and the populations are considered stable (Harris *et al.* 1997. In Missouri, populations are declining in the Osage, Sac, Gasconade, Meramec, Bourbeuse, and Big Rivers, and the status of the St. Francis River population is currently unknown (Service 2009). In Arkansas, the Ouachita and Saline River populations appear to be recruiting and are considered stable (Harris *et al.* 1997; J.L. Harris, AHTD, pers. comm. 2009 in Service 2009), while the status of the White River, Current River, Eleven Point River, and Little Missouri River populations is unknown (Service 2009).

The pink mucket is sporadically distributed and rare in Bayou Bartholomew (Service 2009), which drains portions of Arkansas and Louisiana and is one of the longest rivers in the U.S. that is unchannelized and undammed its entire length (Brooks *et al.* 2008). The status of this population is currently unknown.

Status and distribution

The pink mucket was historically widespread, but rare throughout its range (Service 1985). This species currently exists in 29 streams, with a total occupied linear range estimated at approximately 1,300 RMs. Historically, the pink mucket occupied approximately 6,700 RMs in at least 48 streams in the lower half of the Mississippi River basin. Thus, there has been an 80% loss of the historical distribution of the pink mucket over the past century (Service 2009).

A variety of threats contributed to the historical decline of the pink mucket, including the development of impoundments for recreation, navigation, flood control, water supply, and electricity, siltation from other human activities, and pollution (Service 1985). In addition to these ongoing threats, extant populations are primarily impacted by reservoir releases, mining practices, industrial discharges, stochastic events, and factors associated with small disjunct populations (Service 2009). Impoundments may adversely impact riverine mussels by killing them during project construction and dredging, suffocating them with accumulated sediments, reducing food and oxygen availability by the reduction of water flow, and extirpating host fish, at least on a local basis. In addition, the impoundments have isolated surviving populations of these mussel species and their associated fish hosts, which may result in decreased genetic diversity and also reduce species' reproductive and recruitment potential.

Other forms of habitat modification include channelization, channel clearing, and desnagging, which may result in streambed scour and erosion, increased turbidity, reduction of groundwater levels, sedimentation, and changes in aquatic community structure. Human activities that historically and currently introduce large quantities of sediment into streams in the Tennessee River drainage include channel modification, agriculture, forestry, mining, and industrial and residential development.

Other types of water quality degradation resulting from point and non-point pollution sources may also affect listed species. Discharges into streams from both these sources may result in decreased dissolved oxygen concentration, increased acidity or conductivity, and other changes in water chemistry that may affect mussels and/or their host fishes.

Table 2. Biological Opinions within the Alabama Field Office boundaries that have been issued for adverse impact to the pink mucket.

OPINIONS[1]	SPECIES	NUMBERS[2]	HABITAT[3]	
			Critical Habitat	Habitat
1994/2	Pink mucket	Not able to determine	NA	~1,800 cubic yards
1995/1	Pink mucket	1	NA	NA
1996/1	Pink mucket	5% of pop.	NA	NA
1997/1	Pink mucket	Not able to determine		~1,800 cubic yards
2000/1	Pink mucket	17	NA	NA
2002/1	Pink mucket	1	NA	1.4 acre

[1] Year/Number of Opinions

[2] The number of individuals of the species that will be lost

[3] Acres, cubic yards, miles of stream or shoreline of critical habitat and non-critical habitat that would be lost or modified.

ENVIRONMENTAL BASELINE

Status of the species within the action area

Pink mucket is rare within the action area. The most recent records of pink mucket in and near the action area were in 2008, when it was found above the action area, just below Nickajack Dam at Tennessee RM 424 and estimated to comprise 0.11% of the mussel community (Lewis 2008), and in 2009, when one live individual was found immediately adjacent to the BLN site at a depth of 25 ft (7.6 m) in a substrate composed of 50% cobble, 40% gravel, and 10% sand (Dinkins 2009). Dinkins (2009) also collected one dead shell in the main channel.

Factors affecting species' environment within the action area

Impoundment of the Tennessee River and its tributaries has likely had the most extensive adverse impacts on populations of the pink mucket within the action area. Construction of dams converted large reaches of free-flowing riverine habitat to lake-like conditions. Along with alteration of the physical habitat, this change also resulted in changes in the fish fauna. Fish species adapted to lake habitats replaced native riverine fishes that served as fish hosts for the mussels. Streambank erosion, poor land use practices, dredging, municipal and industrial discharges, and development along the river have disturbed, altered, or destroyed habitat used by the pink mucket (Service 2004).

However, as detailed in the Service's 2004 biological opinion for TVA's proposed Reservoir Operations Study (ROS) located in the Tennessee River Valley in Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia, TVA has implemented a variety of programs to improve conditions for aquatic resources. Specifically, TVA maintains established minimum flows and minimum dissolved oxygen levels in tailwaters and conducts substantial monitoring of environmental parameters, evaluation of ongoing environmental impacts, and systematic mitigation for large-scale impacts. An example is the Reservoir Release Improvement Program (RRI Program). The RRI Program was initiated to improve water quality and aquatic habitat in tributary tailwaters by providing minimum flows and increasing dissolved oxygen content. Under this program, TVA has restored levels of dissolved oxygen in over 300 miles downstream of 16 projects. Another TVA activity attempts to stabilize reservoir levels for a 2-week period when water temperatures reach 65°F (18°C) at a depth of 5 ft (1.5 m). This fish spawning operation minimizes water level fluctuations during the peak spawning period to avoid more than a 1-foot-per-week (.3-meters-per week) change (either lowering or rising) in pool levels. Stabilizing reservoir levels aids fish spawning success. These and other programs, such as the Vital Signs Monitoring Program, which rates environmental conditions in reservoirs using a reservoir specific fish and benthic Index of Biotic Integrity (IBI), may benefit mussel resources in the Tennessee River, including federally listed species, because fish play a vital role in the life cycles of mussels (Service 2004).

EFFECTS OF THE ACTION

Factors to be considered

The primary effects of the proposed construction and operation of a single nuclear unit at BLN are direct and indirect impacts associated with the dredging of the intake channel, intake channel overbank, and barge unloading terminal, and the direct and indirect impacts of the thermal and chemical releases from the coolant water effluent.

Analysis for the effects of the action

Dredging will directly harm or kill mussels inhabiting the sediment within the intake channel (for both B&W and AP1000 reactors), the intake channel overbank (B&W), and the barge unloading terminal (AP1000) areas. The resulting mobilization of sediments, such as silt and sand, may harm or kill mussels downstream, where such sediments may smother mussels or otherwise compromise respiration, feeding, and reproduction. Dredging in the barge terminal area is anticipated to be necessary only once, while dredging in the intake channel and overbank areas will need to be done every 5 to 10 years.

The operation of barges for the transportation of heavy equipment, large reactor components, construction modules too large to ship by train, and removal of construction debris and other waste from the site will result in brief periods of extreme turbulence, increased suspended sediments, scouring of substrate (and possibly mussels) from the riverbed, and accumulation of fine sediments in surrounding areas as a result of tow propeller wash. These impacts could

result in direct harm or killing of mussels (i.e., scouring of substrate) and interference with respiration, feeding, and reproduction.

Species' response to the proposed action

Given the pink mucket's rarity in the action area, its disparate occurrences throughout the Tennessee River, and its low resilience to changes in its habitat, it is unlikely that this species would recolonize areas that have been dredged or areas that have otherwise been rendered unsuitable as a result of this proposed project in the foreseeable future.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Large recreational boats and barge traffic that move upriver and downriver through the action area likely have some effect on aquatic species and habitats. Propeller wash creates waves that erode the riverbanks, resulting in sediment deposit on the river bottom. Runoff from adjacent agricultural fields may contain fertilizers and/or pesticides that can affect aquatic organisms. Residential, commercial, and industrial development around Guntersville Reservoir is likely to continue, resulting in destruction or alteration of aquatic and terrestrial habitats. These effects have occurred over many years and are likely to continue.

CONCLUSION

After reviewing the current status of the pink mucket, the environmental baseline for the action area, the effects of the proposed construction of a single nuclear unit at BLN, and the cumulative effects, it is the Service's biological opinion that the proposed completion and operation of one of the partially constructed Babcock & Wilcox (B&W) pressurized light water reactor units on (BLN unit 1 or 2) or construction and operation of a new Westinghouse AP1000 advanced pressurized light water reactor at the BLN site, as proposed, is not likely to jeopardize the continued existence of the pink mucket. No critical habitat has been designated for the species; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to

listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary for listed species and must be undertaken by TVA for the exemption in section 7(o)(2) to apply. TVA has a continuing duty to regulate the activity covered by this incidental take statement. If TVA fails to assume and implement the terms and conditions of the incidental take statement, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, TVA must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

AMOUNT OR EXTENT OF TAKE ANTICIPATED

If the B&W alternative is chosen by TVA, the Service expects that 68 pink muckets and an unknown number of larvae could be taken. If the AP1000 alternative is chosen, 33 pink mucket and an unknown number of larvae could be taken (Table 3). The incidental take is expected to be in the form of harm and kill.

Dredging of the intake channel proper, a 240,000 ft^2 (22,297 m^2) area where the total mussel density is estimated by Dinkins (2009) as 0.12 mussels/m^2, 0.1% of which is estimated to be pink mucket (Lewis 2008), could result in direct killing or harm of 3 pink muckets. Dredging the overbank portion of the intake channel, a 19,000 ft^2 (1,765 m^2) area where the total mussel density is estimated as 0.81 mussels/m^2 (Dinkins 2009), 0.1% of which is estimated to be pink mucket (Lewis 2008), could result in direct killing or harm of 2 pink muckets. Dredging will result in the temporary suspension and deposition of sediments, flow pattern alteration, and tow propeller wash, as well. Within the intake channel proper, these indirect effects are expected to occur over an estimated 156,000 ft^2 (14,493 m^2), and affect an estimated 2 pink muckets. Within the overbank portion, indirect effects are expected to occur over an estimated 456,200 ft^2 (42,382 m^2) and affect an estimated 34 pink muckets. Dredging will occur every 5 to 10 years, and it is unlikely that pink muckets will re-colonize the intake channel and overbank areas between these maintenance dredging activities.

For the AP1000 alternative, the barge terminal area will be dredged one-time only. Approximately 15,000 ft^2 (1,394 m^2) will be dredged, which may result in the direct killing or harm of one pink mucket. Indirect effects from the dredging will be similar to those described above for the intake channel. In addition, the pink mucket could be impacted by tow propeller wash caused by the barges that will need to be used for both the B&W and AP1000 construction alternatives. The indirect effects associated with tow propeller wash include extreme turbulence, increased suspended sediments, scouring of substrate, and accumulation of fine sediment in

surrounding areas. An estimated 86,250 ft^2 (8,013 m^2) will be affected, which in turn will affect 7 pink muckets.

The thermal and chemical mixing zone (i.e., the limits of where thermal and chemical effects from the diffuser would be felt) encompasses a 250-ft (76 m) radius from the diffuser in all directions for both the B&W and AP1000 alternatives. According to the CORMIX modeling provided in Appendix A of the Biological Assessment, live mussels on the river bottom will not be directly impacted by the coolant water effluent within the mixing zone. However, indirectly these mussels may be unable to reproduce successfully due to the stressing of host fish that pass through the mixing zone, the inability of mussel larvae to attach, or remain attached to host fish in the mixing zone or affected by the mixing zone, death or disabling of larvae attached to host fish that past through the mixing zone, etc. An unknown number of larvae and an estimated 20 adult pink muckets may be harmed within the 269,000 ft^2 (20,242 m^2) area associated with the mixing zone.

Table 3. Types and amount of take for the proposed action.

Impact Area/Action	Type of Take	Area (ft^2/m^2)	Total mussel density[a] (no/m^2)/Total mussels	No. of adult/juvenile pink mucket taken[b]
Intake Channel/ Dredging – Direct (B&W and AP1000)	Harm and Kill	240,000/22,297	2,676	3
Intake Channel/Dredging – Indirect (B&W and AP1000)	Harm	156,000/14,493	1,739	2
Overbank/Dredging – Direct (B&W)	Harm and Kill	19,000/1,765	1,430	2
Overbank/Dredging-Indirect (B&W)	Harm	456,200/42,382	34,329	34
Barge Terminal/Dredging – Direct (AP1000)	Harm and Kill	15,000/1,394	1,129	1
Barge Terminal/Dredging and Barge Use – Indirect (B&W and AP1000)	Harm	86,250/8,013	6,491	7
Effluent Mixing Zone (B&W and AP1000)[b]	Harm	269,000/24,900	20,242	20

[a]Densities based on Dinkins (2009) with a 3X multiplier correction factor to account for sampling type error (surface searches).
[b]The number of larvae that may be affected by the Effluent Mixing Zone is unknown.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of expected take is not likely to result in jeopardy to the pink mucket or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize impacts of incidental take of the pink mucket.

1. Reduce the area and amount of sediment deposition downstream of the dredging activities.

2. Work with the Service, State fish and wildlife agencies, and non-governmental groups to promote recovery of the pink mucket and other listed mussel species from the Tennessee/Cumberland River basins.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, TVA must comply with the following terms and conditions, which carry out the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. Implement Best Management Practices (BMPs) during the proposed dredging activities.

2. To the maximum extent possible, TVA should restrict all dredging activities to periods during low river discharges when the potential for downstream movement of dredged and suspended material is reduced.

3. As per the commitment made in TVA's March 18, 2010, letter to the Service's Alabama Field Office, and follow-up meeting on April 1, 2010, TVA will provide $30,000 to the Alabama Department of Conservation and Natural Resources' Alabama Aquatic Biodiversity Center (AABC) for the reintroduction and/or augmentation of pink mucket and other high priority mollusks within their historic ranges. The reintroduction/augmentation project will be funded by TVA prior to the initiation of dredging activities associated with the construction and operation of a single nuclear unit at the BLN site.

Upon locating a dead, injured, or sick individual of an endangered or threatened species, initial notification must be made to the Fish and Wildlife Service Law Enforcement Office (Special Agent Donnie Grace, 1208-B Main Street, Daphne, AL 36526 (251/441-5787). Additional notification must be made to the Fish and Wildlife Service Ecological Services

Field Office (251/441-5181). Care should be taken in handling sick or injured individuals and in the preservation of specimens in the best possible state for later analysis of cause of death or injury.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. The Service believes that no more than 68 adult/juvenile and an unknown number of larval-stage pink mucket will be incidentally taken if the B&W alternative is chosen, and that no more than 33 adult/juvenile and an unknown number of larvae will be taken if the AP1000 alternative is chosen. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. TVA must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help carry out recovery plans, or to develop information.

- Continue to work with the Service and other partners in modifying dam discharges to improve habitat conditions in tailwaters for the pink mucket and other endangered and threatened mollusks.
- Determine the status of pink mucket populations in areas impacted by TVA actions on the Tennessee River through periodic monitoring that includes a quantitative component that provides basic population size estimates and a sampling design specifically for searching for juveniles, thus facilitating the assessment of recruitment into a population.
- Conduct studies to determine if hydraulic or other factors associated with TVA's operations can affect pink mucket patchiness and rareness in large river habitats and conduct threat assessments from particular stressors.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the November 4, 2009, request. As written in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary TVA involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information

reveals effects of the TVA action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the TVA action is later modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease until reinitiation.

For this biological opinion the incidental take would be exceeded when the take exceeds 68 pink muckets for the B&W alternative or 33 pink muckets for the AP1000 alternative, which is what has been exempted from the prohibitions of section 9 by this opinion. The Service appreciates the cooperation of TVA during this consultation. We would like to continue working with you and your staff regarding the Bellefonte Nuclear Plant project. For further coordination please contact Karen Marlowe at (205) 726-2667.

Sincerely,

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

cc: Bob Butler, USFWS, Ecological Services, Asheville, NC
USFWS, Ecological Services, Cookeville, TN
ADCNR, Montgomery, AL
GSA, Tuscaloosa, AL

LITERATURE CITED

Alabama Department of Environmental Management. 1998. Alabama Department of Environmental Management permit rationale, Tennessee Valley Authority Bellefonte Nuclear Plant. Prepared by David Butts, September 9, 1998.

Barnhart, M.C., F.A. Riusech, and A.D. Roberts. 1997. Fish hosts of the federally endangered pink mucket, *Lampsilis abrupta*. Triannual Unionid Report 13:35.

Brooks, J.A., R.L. Minton, S.G. George, D.M. Hayes, R. Ulmer, and F. Pezold. 2008. Diversity and distribution of native freshwater mussels in Bayou Bartholomew, Arkansas. Southeastern Fishes Council No. 50:8-17.

Buchanan, A.C. 1980. Mussels (Naiades) of the Meramec River basin. Missouri Department of Conservation, Aquatic Series. No. 17, 68 pp.

Clarke, A.H. 1982. Survey of the freshwater mussels of the upper Kanawha River (RM 91-95), Fayette County, West Virginia, with special reference to *Epioblasma toulosa* (Rafinesque) and *Lampsilis abrupta* (Say) (=*Lampsilis orbiculata* (Hildreth), of authors). Final Report. U.S. Fish and Wildlife Service, Newton Corner, MA. Order No. 50181-0546-2. 45 pp.

Cumberlandian Region Mollusk Restoration Committee. 2009. Draft plan for the controlled propagation, augmentation and reintroduction of freshwater mollusks of the Cumberlandian Region. V + 143 pp.

Dinkins, G.R. 2009. Survey for Anthony's rivershail (*Athearnia anthonyi*) in the Tennessee River in vicinity of Bellefonte Nuclear Power Plant, Jackson County, Alabama. Report prepared for Tennessee Valley Authority, November 2009. 30 pp.

Douglas, B. ca. 1999. A [1999] survey of the mussel fauna of the upper Kanawha River, West Virginia (RM 95.5-91.0) and a review of mussel species currently known to be present in the Kanawha River (RM 95.5-0.0) Unpublished report, U.S. Fish and Wildlife Service, Elkins, West Virginia. 13 pp.

Gordon, M.E., and J.B. Layzer. 1989. Mussels (Bivalvia: Unionoidea) of the Cumberland River: review of life histories and ecological relationships. U.S. Department of the Interior, Fish and Wildlife Service Biological Report 89(15). 87 pp. + appendices.

Harris, J.L., P.J. Rust, A.C. Christian, W.R. Posey, II, C.L. Davidson, and G.L. Harp. 1997. Revised status of rare and endangered Unionacea (Mollusca: Margaritiferidae, Unionidae) in Arkansas. Proceedings of the Arkansas Academy of Science 51:66-89.

Hickman, M.E. 1937. A contribution to mollusca of east Tennessee. Unpublished master's thesis, Department of Zoology, University of Tennessee, Knoxville. 165 pp., 104 pl.

Hutson, C., and M.C. Barnhart. 2004. Survey of endangered and special concern mussel species in the Sac, Pomme de Terre, St. Francis, and Black River systems of Missouri, 2001-2003. Unpublished report, Missouri Department of Conservation, Jefferson City. 379 pp.

Lewis Environmental Consulting, LLC. 2008. Mussel survey at Tennessee River Mile 423.6-423.9 along the left descending bank in Marion County, Tennessee. Report prepared for Thompson Engineering, Inc. 27 pp.

Mirarchi, R.E., J.T. Garner, M.F. Mettee, and P.E. O'Neil. 2004. Alabama wildlife, volume 2, imperiled aquatic mollusks and fishes. The University of Alabama Press, Tuscaloosa, Alabama. 255 pp.

Tennessee Valley Authority. 1982. Predicted effects for mixed temperatures exceeding 30°C (86°F) in Guntersville Reservoir, Alabama, in the vicinity of the diffuser discharge, Bellefonte Nuclear Plant. TVA Report No. TVA/ONR/WRF 82/5, February 1982.

Tennessee Valley Authority. 2009a. Biological assessment: proposed single unit nuclear plant development at Bellefonte nuclear site and associated transmission line upgrades, Alabama, Tennessee, and Georgia. 151 pp.

Tennessee Valley Authority. 2009b. Draft supplemental environmental impact statement; single nuclear unit at the Bellefonte plant site, Jackson County, Alabama. 407 pp.

U.S. Fish and Wildlife Service. 1976. Endangered and threatened wildlife and plants; endangered status for 159 taxa of animals. Federal Register 41(115): 24062-24067.

U.S. Fish and Wildlife Service. 1985. Recovery plan for the pink mucket pearly mussel *Lampsilis orbiculata* (Hildreth, 1828). U.S. Fish and Wildlife Service. Atlanta, GA. 47 pp.

U.S. Fish and Wildlife Service. 2004. Biological opinion on the proposed Reservoir Operations Study (ROS) located in the Tennessee River Valley in Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia. U.S. Fish and Wildlife Service. Cookeville, TN. 39 pp.

U.S. Fish and Wildlife Service. 2009. Pink mucket *Lampsilis abrupta*; Draft 5-year review: summary and evaluation. U.S. Fish and Wildlife Service. Asheville, NC. 68 pp.

Williams, J.D., A.E. Bogan, and J.T. Garner. 2008. Freshwater mussels of Alabama and the Mobile Basin in Georgia, Mississippi and Tennessee. The University of Alabama Press, Tuscaloosa. 908 pp.

Yokley, P., Jr. 1972. Freshwater mussel ecology, Kentucky Lake, Tennessee. Tennessee Game and Fish Commission Project 4-46R. 133 pp.

State Historic Preservation Officer Consultation (Alabama, Georgia, and Tennessee)

Page intentionally blank

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

August 25, 2009

Ms. Stacye Hathorn
Alabama Historical Commission
468 South Perry Street
Montgomery, Alabama 36130-0900

Dear Ms. Hathorn:

TVA, BELLEFONTE NUCLEAR PLANT COMPLETION OF ONE UNIT, JACKSON COUNTY, ALABAMA

The Tennessee Valley Authority (TVA) previously consulted with your office regarding the construction of two new reactor units at the Bellefonte Nuclear Plant site in Jackson County, Alabama (BLN) (NuStart Combined Operating License Application for Units 3 and 4; AHC 2006-1211). TVA is now preparing a Supplemental Environmental Impact Statement (SEIS) that will update existing information about the potential environmental impacts associated with its proposal to operate a single nuclear unit on the same site. The SEIS will evaluate three alternatives – completing and operating one of the partially completed units, constructing and operating a new Westinghouse AP1000 nuclear unit, and taking no action to operate a nuclear unit at the site.

TVA originally applied for a license for the construction and operation of two Babcock & Wilcox pressurized water reactors, BLN Units 1 and 2 in 1974. In 1988, TVA formally notified the Nuclear Regulatory Commission of construction deferral and at that time, Unit 1 was approximately 90 percent complete and Unit 2 was approximately 58 percent complete. The plant was maintained in deferred status until 2005. Since then, several buildings have been removed.

TVA has determined the area of potential effects (APE) for the construction of a single unit to be the approximate 606 acres surrounding the proposed construction and its associated infrastructure as well as a 1-mile viewshed for historic structures. Due to the similarity of areas needed for construction and operational purposes, this same APE was earlier considered and coordinated with the Alabama State Historic Preservation Office (AL SHPO) regarding Units 3 & 4.

Two surveys were conducted within the APE to identify archaeological sites or historic structures that may be impacted by the construction of Units 3 & 4 (Deter-Wolfe 2007 and Jenkins 2008). Results of the archaeological survey concluded that sites 1JA300 and 1JA301 were completely destroyed by the intake construction. Site 1JA113 was determined, in consultation with AL SHPO and federally recognized Indian tribes to be ineligible for listing in the National Register of Historic Places (NRHP) along with one newly recorded historic archaeological site (1JA1103). Site 1JA111 was recommended

Ms. Stacye Hathorn
Page 2
August 25, 2009

as potentially eligible for listing in NRHP. TVA has committed to fence off and mark 1JA111 on the BLN site drawings to avoid impacts by any future planned construction. Any future modification to current project plans which have a potential to affect this site, would require TVA to conduct further testing of 1JA111 to determine its NRHP eligibility status.

Two historic sites (Bellefonte Cemetery and the African American Bellefonte Cemetery) were identified in the visual APE that was determined to meet the criteria of eligibility for the NRHP. It was determined by TVA, in consultation with your office, that these eligible resources were protected by existing dense vegetative buffers and will not be adversely affected by any new construction at the Bellefonte Plant site.

TVA is providing a copy of this report to the Eastern Band of Cherokee Indians, United Keetoowah Band, Cherokee Nation, The Chickasaw Nation, Muscogee (Creek) Nation of Oklahoma, Thlopthlocco Tribal Town, Kialegee Tribal Town, Alabama-Quassarte Tribal Town, Alabama-Coushatta Tribe of Texas, Eastern Shawnee Tribe of Oklahoma, Shawnee Tribe, Absentee Shawnee Tribe of Oklahoma, Seminole Tribe of Florida, Jena Band of Choctaw Indians, the Poarch Band of Creek Indians, and the Choctaw Nation of Oklahoma and requesting their comments on our findings.

Based on these findings and the commitment to protect site 1JA111, TVA has determined that the proposed undertaking will have no effect on historic properties. Pursuant to Section 106 of the *National Historic Preservation Act* and its implementing regulations at 36 CFR § 800, TVA is seeking your concurrence with this determination.

If you have any questions or comments, please contact me or Erin Pritchard at eepritchard@tva.gov or 865-632-2463.

Sincerely,

A. Eric Howard
Manager (Interim)
Cultural Resources

EEP:IKS
cc: Ruth Horton, WT 11D-K
Bruce Yeager, WT 11D-K
EDMS, WT 11D-K

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
468 SOUTH PERRY STREET
MONTGOMERY, ALABAMA 36130-0900

FRANK W. WHITE
EXECUTIVE DIRECTOR

TEL: 334-242-3184
FAX: 334-240-3477

September 9, 2009

Eric Howard
TVA
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1499

Re: AHC 06-1211
Unit One Bellefonte Nuclear Plant
Jackson County, Alabama

Dear Mr. Howard:

Upon review of the information forwarded by your office, we have determined that we agree with your findings. We agree with the proposals to avoid archaeological site 1Ja111 as it is potentially eligible for the National Register of Historic Places (NRHP). We further agree that should future modifications to the development plan include an impact to this site, Phase II testing proposals will have to be developed and carried out in consultation with our office. Finally, we agree that the two NRHP eligible cemeteries will not be adversely affected by the proposed activities due to the existing dense vegetation buffers.

We appreciate your efforts on this project. Should you have any questions, please contact Greg Rhinehart at (334) 230-2662. Please have the AHC tracking number referenced above available and include it with any correspondence.

Truly yours,

Elizabeth Ann Brown
Deputy State Historic Preservation Officer

EAB/GCR/gcr

THE STATE HISTORIC PRESERVATION OFFICE
www.preserveala.org

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

September 9, 2009

Ms. Stacye Hathorn
Alabama Historical Commission
468 South Perry Street
Montgomery, Alabama 36130-0900

Dear Ms. Hathorn:

TVA, BELLEFONTE NUCLEAR TRANSMISSION LINE UPGRADES: LIMESTONE, JACKSON, AND MORGAN COUNTIES, ALABAMA; BEDFORD, COFFEE, SEQUATCHIE, HAMILTON, AND MARION COUNTIES, TENNESSEE, AND WALKER AND DADE COUNTIES, GEORGIA

By this letter, the Tennessee Valley Authority (TVA) is initiating consultation for the proposed upgrading of TVA transmission lines (TL) and TL right-of-ways (ROWs) associated with the Bellefonte Nuclear Plan Completion Project (PROJECT). TVA is in the planning stages of the PROJECT and the proposed upgrading of the TLs would begin around 2016.

Currently, TVA is in the process of preparing a Supplemental Environmental Impact Statement that would update existing information about the potential environmental impacts associated with its proposal to operate a single nuclear generation unit at the Bellefonte Nuclear Plant (BLN) site. TVA may choose to 1) complete and operate either one of two partially constructed units (Babcock and Wilcox pressurized water reactor) or 2) construct and operate one new technology unit (Westinghouse AP1000 advanced boiling water reactor). The No Action Alternative would also be considered.

As currently proposed under both Action Alternatives, the existing 161-kilovolt (kV) and 500-kV switchyards constructed on the BLN site would be refurbished and reenergized; four 500-kV TL that terminate in the BLN switchyard would be reestablished; the ROW would be brought back to current TVA standards; the capacity of nine existing TLs would be increased; and two 161-kV transmission lines that supply a 161-kV switchyard to provide site power would be reestablished (Figure 1); all of these TLs and ROWs are existing.

TVA has determined the area of potential effects (APE) to be the ROW and TLs that are slated for upgrades and the footprint of all infrastructures (e.g., access roads, staging areas). The architectural APE would be a .5-mile wide area linearly centered along the proposed TL ROW.

A review of the Alabama, Tennessee, and Georgia site files identified twenty-five sites have been previously recorded within the APE. One of these sites (1MG785) is no longer extant. Seven sites (1MG116, 1MG115, 1MG667, 1MG758, 1MG757, 1JA304, 1JA694) were previously determined not eligible for the National Record of Historical Places (NRHP). Two sites, 1MG735 and 9WA164, have been previously determined potentially eligible for the NRHP. The remaining 15 sites (1JA637, 1JA650, 40MI246, 40MI247, 40HA0089, 40MI248, 1JA453, 1JA452, 1JA304, 1JA377, 1JA518, 1JA532, 1JA524, 1JA617, and 1JA558) have not been assessed for NRHP eligibility. In Alabama, one previously recorded historic district (the City of

Ms. Stacye Hathorn
Page 2
September 9, 2009

Bridgeport) falls within the architectural APE. In Georgia, one eligible Historic District (Happy Valley Farms in Walker County, Georgia) and two eligible historic structures (WA-WA-114 and WA-WA-642) falls within the .5 mile architectural APE. All of these properties and other yet-to-be-identified properties would be assessed in consultation with your office and other interested parties.

At this time TVA is simply providing notification of the proposed undertaking. By 2014, TVA cultural resources would consult with your offices regarding the Scope of Work for the evaluation and identification of any cultural resources that would be affected by the proposed undertaking.

Should you have any questions or comments, please contact Richard Yarnell at 865/632-3463 or wryarnell@tva.gov.

Sincerely,

A. Eric Howard
Manager (Interim)
Cultural Resources

MH:IKS
Enclosure
cc: EDMS, WT 11D-K

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

September 9, 2009

Mr. E. Patrick McIntyre, Jr.
Executive Director
Tennessee Historical Commission
Clover Bottom Mansion
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TVA, BELLEFONTE NUCLEAR TRANSMISSION LINE UPGRADES: LIMESTONE, JACKSON, AND MORGAN COUNTIES, ALABAMA; BEDFORD, COFFEE, SEQUATCHIE, HAMILTON, AND MARION COUNTIES, TENNESSEE, AND WALKER AND DADE COUNTIES, GEORGIA

By this letter, the Tennessee Valley Authority (TVA) is initiating consultation for the proposed upgrading of TVA transmission lines (TL) and TL right-of- ways (ROWs) associated with the Bellefonte Nuclear Plan Completion Project (PROJECT). TVA is in the planning stages of the PROJECT and the proposed upgrading of the TLs would begin around 2016.

Currently, TVA is in the process of preparing a Supplemental Environmental Impact Statement that would update existing information about the potential environmental impacts associated with its proposal to operate a single nuclear generation unit at the Bellefonte Nuclear Plant (BLN) site. TVA may choose to 1) complete and operate either one of two partially constructed units (Babcock and Wilcox pressurized water reactor) or 2) construct and operate one new technology unit (Westinghouse AP1000 advanced boiling water reactor). The No Action Alternative would also be considered.

As currently proposed under both Action Alternatives, the existing 161-kilovolt (kV) and 500-kV switchyards constructed on the BLN site would be refurbished and reenergized; four 500-kV TL that terminate in the BLN switchyard would be reestablished; the ROW would be brought back to current TVA standards; the capacity of nine existing TLs would be increased; and two 161-kV transmission lines that supply a 161-kV switchyard to provide site power would be reestablished (Figure 1); all of these TLs and ROWs are existing.

TVA has determined the area of potential effects (APE) to be the ROW and TLs that are slated for upgrades and the footprint of all infrastructures (e.g., access roads, staging areas). The architectural APE would be a .5 mile wide area linearly centered along the proposed TL ROW.

A review of the Alabama, Tennessee, and Georgia site files identified twenty-five sites have been previously recorded within the APE. One of these sites (1MG785) is no longer extant. Seven sites (1MG116, 1MG115, 1MG667, 1MG758, 1MG757, 1JA304, 1JA694) were previously determined not eligible for the National Record of Historical Places (NRHP). Two sites 1MG735 and 9WA164 have been previously determined potentially eligible for the NRHP. The remaining 15 sites (1JA637, 1JA650, 40MI246, 40MI247, 40HA0089, 40MI248, 1JA453,

Mr. E. Patrick McIntyre, Jr.
Page 2
September 9, 2009

1JA452, 1JA304, 1JA377, 1JA518, 1JA532, 1JA524, 1JA617, 1JA558) have not been assessed for NRHP eligibility. In Alabama, one previously recorded historic district (the City of Bridgeport) falls within the architectural APE. In Georgia, one eligible Historic District (Happy Valley Farms in Walker County, Georgia) and two eligible historic structures (WA-WA-114 and WA-WA-642) falls within the .5-mile architectural APE. All of these properties and other yet-to-be-identified properties would be assessed in consultation with your office and other interested parties.

At this time, TVA is simply providing notification of the proposed undertaking. By 2014, TVA cultural resources would consult with your offices regarding the Scope of Work for the evaluation and identification of any cultural resources that would be affected by the proposed undertaking.

Should you have any questions or comments, please contact Richard Yarnell at 865/632-3463 or wryarnell@tva.gov.

Sincerely,

A. Eric Howard
Manager (Interim)
Cultural Resources

MH:IKS
Enclosure
cc: EDMS, WT 11D-K

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

September 10, 2009

Mr. Ray Luce
State Historic Preservation Officer
34 Peachtree Street, NW, Suite 1600
Atlanta, Georgia 30303-2316

Dear Mr. Luce:

TVA, BELLEFONTE NUCLEAR TRANSMISSION LINE UPGRADES: LIMESTONE, JACKSON, AND MORGAN COUNTIES, ALABAMA; BEDFORD, COFFEE, SEQUATCHIE, HAMILTON, AND MARION COUNTIES, TENNESSEE, AND WALKER AND DADE COUNTIES, GEORGIA

By this letter, the Tennessee Valley Authority (TVA) is initiating consultation for the proposed upgrading of TVA transmission lines (TL) and TL right-of-ways (ROW) associated with the Bellefonte Nuclear Plan Completion Project (PROJECT). TVA is in the planning stages of the PROJECT and the proposed upgrading of the TLs would begin around 2016.

Currently, TVA is in the process of preparing a Supplemental Environmental Impact Statement that would update existing information about the potential environmental impacts associated with its proposal to operate a single nuclear generation unit at the Bellefonte Nuclear Plant (BLN) site. TVA may choose to 1) complete and operate either one of two partially constructed units (Babcock and Wilcox pressurized water reactor) or 2) construct and operate one new technology unit (Westinghouse AP1000 advanced boiling water reactor). The No Action Alternative would also be considered.

As currently proposed under both Action Alternatives, the existing 161-kilovolt (kV) and 500-kV switchyards constructed on the BLN site would be refurbished and reenergized; four 500-kV TL that terminate in the BLN switchyard would be reestablished; the ROW would be brought back to current TVA standards; the capacity of nine existing TLs would be increased; and two 161-kV transmission lines that supply a 161-kV switchyard to provide site power would be reestablished (Figure 1); all of these TLs and ROWs are existing.

TVA has determined the area of potential effects (APE) to be the ROW and TLs that are slated for upgrades and the footprint of all infrastructures (e.g., access roads, staging areas). The architectural APE would be a .5 mile wide area linearly centered along the proposed TL ROW.

A review of the Alabama, Tennessee, and Georgia site files identified twenty-five sites have been previously recorded within the APE. One of these sites (1MG785) is no longer extant. Seven sites (1MG116, 1MG115, 1MG667, 1MG758, 1MG757, 1JA304, 1JA694) were previously determined not eligible for the National Register of Historical Places (NRHP). Two sites, 1MG735 and 9WA164, have been previously determined potentially eligible for the NRHP. The remaining 15 sites (1JA637, 1JA650, 40MI246, 40MI247, 40HA0089, 40MI248, 1JA453, 1JA452, 1JA304, 1JA377, 1JA518, 1JA532, 1JA524, 1JA617, 1JA558) have not been assessed for NRHP eligibility. In Alabama, one previously recorded historic district (the City of Bridgeport)

Mr. Ray Luce
Page 2
September 10, 2009

falls within the architectural APE. In Georgia, one eligible Historic District (Happy Valley Farms in Walker County, Georgia) and two eligible historic structures (WA-WA-114 and WA-WA-642) falls within the .5 mile architectural APE. All of these properties and other yet-to-be-identified properties would be assessed in consultation with your office and other interested parties.

At this time, TVA is simply providing notification of the proposed undertaking. By 2014, TVA Cultural Resources would consult with your offices regarding the Scope of Work for the evaluation and identification of any cultural resources that would be affected by the proposed undertaking.

Should you have any questions or comments, please contact Richard Yarnell at 865/632-3463 or wryarnell@tva.gov.

Sincerely,

A. Eric Howard
Manager (Interim)
Cultural Resources

MH:IKS
Enclosure
cc: EDMS, WT 11D-K

ALABAMA-COUSHATTA TRIBE OF TEXAS
571 State Park Rd 56 • Livingston, Texas 77351 • (936) 563-1100

September 18, 2009

Tennessee Valley Authority
Attn: Pat Bernard Ezzell
400 West Summit Hill Drive
Knoxville, TN 37902-1499

Dear Mrs. Ezzell:

On behalf of Chief Oscola Clayton Sylestine and the Alabama-Coushatta Tribe, our appreciation is expressed on your efforts to consult us regarding the Bellefonte Nuclear Plant proposal in Jackson County.

Our Tribe maintains ancestral associations within the state of Mississippi despite the absence of written records to completely identify Tribal activities, villages, trails, or grave sites. However, it is our objective to ensure significances of Native American ancestry including the Alabama-Coushatta Tribe are administered with the utmost regard.

Upon review of your August 26, 2009 documents submitted to our office, no known impacts to religious, cultural, or historical assets of the Alabama-Coushatta Tribe of Texas should occur in conjunction with this activity. Based upon the provisions to be incorporated during implementation, we have no objections to the proceeding of this proposal.

In the event of inadvertent discovery of human remains and/or archaeological artifacts, activity in proximity to the location must cease and appropriate authorities, including this office, notified without delay. Should you require additional assistance, please do not hesitate to contact us.

Respectfully submitted,

Bryant J. Celestine
Historic Preservation Officer

Telephone: 936 – 563 – 1181 celestine.bryant@actribe.org Fax: 936 – 563 – 1183

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
468 SOUTH PERRY STREET
MONTGOMERY, ALABAMA 36130-0900

FRANK W. WHITE
EXECUTIVE DIRECTOR

TEL: 334-242-3184
FAX: 334-240-3477

September 25, 2009

A. Eric Howard
TVA
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1499

Re: AHC 09-1092
Transmission Line Upgrades
Bellefonte Nuclear Facility
Multiple Counties, Alabama

Dear Mr. Howard:

Thank you for forwarding the information regarding the development of a Supplemental Environmental Impact Statement for the above referenced project. We look forward to working with you as this process proceeds.

Should you have any questions, please contact Greg Rhinehart at (334) 230-2662. Please have the AHC tracking number referenced above available and include it with any correspondence.

Sincerely,

Frank White
State Historic Preservation Officer

FW/LAW/AMH/gcr

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, **Tennessee** 37902-1499

October 28, 2009

Ms. Stacye Hathorn
Alabama Historical Commission
468 South Perry Street
Montgomery, Alabama 36130-0900

Dear Ms. Hathorn:

AHC 09-1092 TRANSMISSION LINE (TL) UPGRADES BELLEFONTE NUCLEAR FACILITY MULTIPLE COUNTIES, ALABAMA

In a letter dated September 9, 2009, TVA initiated consultation regarding the proposed upgrading of TVA TLs and right-of-ways (ROWs) which would result from the Bellefonte Nuclear Plant Completion Project (Project). Following further review, TVA finds that in order to proceed with Project planning an agreement document developed in consultation with your office and other interested parties would be required. This document would facilitate the phased identification and evaluation of historic properties that may be affected by the proposed TL and ROW upgrades planned in 2016. Therefore, TVA's Archeological and Historic staff are in the process of drafting an agreement document for your review and comment and will submit this document to you in the forthcoming month.

Should you have any questions or comments, please contact Richard Yarnell at 865/632-3463 or wryarnell@tva.gov.

Sincerely,

A. Eric Howard
Federal Preservation Officer
WT 11D-K

MH:IKS
cc: EDMS, WT 11D-K

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

October 28, 2009

Mr. Ray Luce
State Historic Preservation Officer
Department of Natural Resources
34 Peachtree Street, NW, Suite 1600
Atlanta, Georgia 30303-2316

Dear Mr. Luce:

TENNESSEE VALLEY AUTHORITY (TVA), BELLEFONTE NUCLEAR PLANT, PROPOSED UPGRADES TO TVA TRANSMISSION LINES (TL), DADE AND WALKER COUNTIES, GEORGIA HP-090914-01

In a letter dated September 9, 2009, TVA initiated consultation regarding the proposed upgrading of TVA TLs and right-of-ways (ROWs) which would result from the Bellefonte Nuclear Plant Completion Project (Project). Following further review, TVA finds that in order to proceed with Project planning an agreement document developed in consultation with your office and other interested parties would be required. This document would facilitate the phased identification and evaluation of historic properties that may be affected by the proposed TL and ROW upgrades planned in 2016. Therefore, TVA's Archeological and Historic staff are in the process of drafting an agreement document for your review and comment and will submit this document to you in the forthcoming month.

Should you have any questions or comments, please contact Richard Yarnell at 865/632-3463 or wryarnell@tva.gov.

Sincerely,

A. Eric Howard
Federal Preservation Officer
WT 11D-K

MH:IKS
cc: EDMS, WT 11D-K

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

October 28, 2009

Mr. E. Patrick McIntyre, Jr.
Executive Director
Tennessee Historical Commission
Clover Bottom Mansion
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TENNEESSEE VALLEY AUTHORITY (TVA), BELLEFONTE NUCLEAR TRANSMISSION LINE (TL) UPGRADES, LIMESTONE, JACKSON, AND MORGAN COUNTIES, ALABAMA; BEDFORD, COFFEE, SEQUATCHIE, HAMILTON, AND MARION COUNTIES, TENNESSEE; AND WALKER AND DADE COUNTIES, GEORGIA

In a letter dated September 9, 2009, TVA initiated consultation regarding the proposed upgrading of TVA TLs and right-of-ways (ROWs) which would result from the Bellefonte Nuclear Plant Completion Project (Project). Following further review, TVA finds that in order to proceed with Project planning an agreement document developed in consultation with your office and other interested parties would be required. This document would facilitate the phased identification and evaluation of historic properties that may be affected by the proposed TL and ROW upgrades planned in 2016. Therefore, TVA's Archeological and Historic staff are in the process of drafting an agreement document for your review and comment and will submit this document to you in the forthcoming month.

Should you have any questions or comments, please contact Richard Yarnell at 865/632-3463 or wryarnell@tva.gov.

Sincerely,

A. Eric Howard
Federal Preservation Officer
WT 11D-K

MH:IKS
cc: EDMS, WT 11D-K

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

November 4, 2009

Mr. Frank White
State Historic Preservation Officer
Alabama Historical Commission
468 South Perry Street
Montgomery, Alabama 36130-0900

Dear Mr. White:

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR A SINGLE NUCLEAR UNIT AT THE BELLEFONTE SITE AND ASSOCIATED TRANSMISSION UPGRADES IN JACKSON COUNTY, LIMESTONE COUNTY, AND MORGAN COUNTY, ALABAMA

Please find enclosed two copies of the draft SEIS, which evaluates Tennessee Valley Authority's (TVA) proposal to complete or construct and operate a single nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA is requesting your review of the draft SEIS and is accepting comments between November 13 and December 28, 2009.

TVA is considering a No Action Alternative and two Action Alternatives: completion and operation of a Babcock and Wilcox pressurized light water reactor or construction and operation of a Westinghouse AP1000 advanced pressurized light water reactor. Either of the two Action Alternatives would use licensing processes that are already underway. The draft SEIS also evaluates the impact of refurbishing, reenergizing, and upgrading existing electrical transmission infrastructure necessary to accommodate new power generation.

TVA has identified the need for additional base load generation in the 2018 to 2020 time frame. Completion or construction of one additional nuclear unit capable of generating between approximately 1,100 and 1,200 megawatt (MW) of power within this time frame would help address the need for additional base load generation in the TVA power service area and help meet TVA's goal to have at least 50 percent of its generation portfolio comprised of low or zero carbon-emitting sources by the year 2020. Both Action Alternatives proposed would also make beneficial use of existing assets at the BLN site.

This draft SEIS supplements TVA's original 1974 *Final Environmental Statement – Bellefonte Nuclear Plant Units 1 and 2* for the BLN project and updates other related environmental documents including a 2008 environmental report for the AP1000 for BLN Units 3 and 4. TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public.

The draft SEIS may be viewed at www.tva.gov/environment/reports/blnp, and comments may be provided to us online. Please note that any comments received, including names and addresses, will become part of the administrative record and will be available for public

inspection. To provide written comments or request a printed copy of the draft SEIS, please contact:

Ruth M. Horton
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, Tennessee 37902

Phone: (865) 632-3719
E-mail: rmhorton@tva.gov.

Also, for general project information, contact:

Andrea L. Sterdis
Nuclear Project Manager
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, Tennessee 37402

Phone: (423) 751-7119
E-mail: alsterdis@tva.gov

Sincerely,

A. Eric Howard
Federal Preservation Officer
Office of Environment and Research
WT 11D-K

Enclosure

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

November 4, 2009

Mr. Ray Luce
State Historic Preservation Officer
34 Peachtree Street, NW, Suite 1600
Atlanta, Georgia 30303-2316

Dear Mr. Luce:

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR A SINGLE NUCLEAR UNIT AT THE BELLEFONTE SITE AND ASSOCIATED TRANSMISSION UPGRADES IN DADE COUNTY AND WALKER COUNTY, GEORGIA

Please find enclosed two copies of the draft SEIS, which evaluates Tennessee Valley Authority's (TVA) proposal to complete or construct and operate a single nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA is requesting your review of the draft SEIS and is accepting comments between November 13 and December 28, 2009.

TVA is considering a No Action Alternative and two Action Alternatives: completion and operation of a Babcock and Wilcox pressurized light water reactor or construction and operation of a Westinghouse AP1000 advanced pressurized light water reactor. Either of the two Action Alternatives would use licensing processes that are already underway. The draft SEIS also evaluates the impact of refurbishing, reenergizing, and upgrading existing electrical transmission infrastructure necessary to accommodate new power generation.

TVA has identified the need for additional base load generation in the 2018 to 2020 time frame. Completion or construction of one additional nuclear unit capable of generating between approximately 1,100 and 1,200 megawatt (MW) of power within this time frame would help address the need for additional base load generation in the TVA power service area and help meet TVA's goal to have at least 50 percent of its generation portfolio comprised of low or zero carbon-emitting sources by the year 2020. Both Action Alternatives proposed would also make beneficial use of existing assets at the BLN site.

This draft SEIS supplements TVA's original 1974 *Final Environmental Statement – Bellefonte Nuclear Plant Units 1 and 2* for the BLN project and updates other related environmental documents including a 2008 environmental report for the AP1000 for BLN Units 3 and 4. TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public.

The draft SEIS may be viewed at www.tva.gov/environment/reports/blnp, and comments may be provided to us online. Please note that any comments received, including names and addresses, will become part of the administrative record and will be available for public

inspection. To provide written comments or request a printed copy of the draft SEIS, please contact:

Ruth M. Horton
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, Tennessee 37902

Phone: (865) 632-3719
E-mail: rmhorton@tva.gov.

Also, for general project information, contact:

Andrea L. Sterdis
Nuclear Project Manager
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, Tennessee 37402

Phone: (423) 751-7119
E-mail: alsterdis@tva.gov

Sincerely,

A. Eric Howard
Federal Preservation Officer
Office of Environment and Research
WT 11D-K

Enclosure

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

November 4, 2009

Mr. E. Patrick McIntyre, Jr.
Executive Director
Tennessee Historical Commission
2941 Lebanon Pike
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR A SINGLE NUCLEAR UNIT AT THE BELLEFONTE SITE AND ASSOCIATED TRANSMISSION UPGRADES IN BEDFORD COUNTY, COFFEE COUNTY, HAMILTON COUNTY, MARION COUNTY, AND SEQUATCHIE COUNTY, TENNESSEE

Please find enclosed two copies of the draft SEIS, which evaluates Tennessee Valley Authority's (TVA) proposal to complete or construct and operate a single nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA is requesting your review of the draft SEIS and is accepting comments between November 13 and December 28, 2009.

TVA is considering a No Action Alternative and two Action Alternatives: completion and operation of a Babcock and Wilcox pressurized light water reactor or construction and operation of a Westinghouse AP1000 advanced pressurized light water reactor. Either of the two Action Alternatives would use licensing processes that are already underway. The draft SEIS also evaluates the impact of refurbishing, reenergizing, and upgrading existing electrical transmission infrastructure necessary to accommodate new power generation.

TVA has identified the need for additional base load generation in the 2018 to 2020 time frame. Completion or construction of one additional nuclear unit capable of generating between approximately 1,100 and 1,200 megawatt (MW) of power within this time frame would help address the need for additional base load generation in the TVA power service area and help meet TVA's goal to have at least 50 percent of its generation portfolio comprised of low or zero carbon-emitting sources by the year 2020. Both Action Alternatives proposed would also make beneficial use of existing assets at the BLN site.

This draft SEIS supplements TVA's original 1974 *Final Environmental Statement – Bellefonte Nuclear Plant Units 1 and 2* for the BLN project and updates other related environmental documents including a 2008 environmental report for the AP1000 for BLN Units 3 and 4. TVA will identify its preferred alternative in the final SEIS after receiving input from the reviewing agencies and the public.

The draft SEIS may be viewed at www.tva.gov/environment/reports/blnp, and comments may be provided to us online. Please note that any comments received, including names and

addresses, will become part of the administrative record and will be available for public inspection. To provide written comments or request a printed copy of the draft SEIS, please contact:

Ruth M. Horton
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, Tennessee 37902

Phone: (865) 632-3719
E-mail: rmhorton@tva.gov.

Also, for general project information, contact:

Andrea L. Sterdis
Nuclear Project Manager
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, Tennessee 37402

Phone: (423) 751-7119
E-mail: alsterdis@tva.gov

Sincerely,

A. Eric Howard
Federal Preservation Officer
Office of Environment and Research
WT 11D-K

Enclosure

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

March 24, 2010

To Those Listed:

TVA, BELLEFONTE NUCLEAR TRANSMISSION LINE UPGRADES, LIMESTONE, JACKSON, AND MORGAN COUNTIES, ALABAMA; BEDFORD, COFFEE, SEQUATCHIE, HAMILTON, AND MARION COUNTIES, TENNESSEE; AND WALKER AND DADE COUNTIES, GEORGIA

TVA previously consulted with you on August 26, 2009, regarding the Bellefonte Nuclear Completion Project. By this letter, the Tennessee Valley Authority (TVA) is providing preliminary documentation for the proposed upgrading of TVA transmission lines (TLs) and TL right-of-ways (ROW) associated with the Bellefonte Nuclear Plant Completion Project (PROJECT). TVA is in the planning stages of the PROJECT and the proposed upgrading of the TLs would begin around 2016.

Currently, TVA is in the process of preparing a Supplemental Environmental Impact Statement that would update existing information about the potential environmental impacts associated with its proposal to operate a single nuclear generation unit at the Bellefonte Nuclear Plant (BLN) site. TVA may choose to 1) complete and operate either one of two partially constructed units (Babcock and Wilcox pressurized water reactor) or 2) construct and operate one new technology unit (Westinghouse AP1000 advanced boiling water reactor). The No Action Alternative would also be considered.

As currently proposed under both Action Alternatives, the existing 161-kilovolt (kV) and 500-kV switchyards constructed on the BLN site would be refurbished and reenergized; four 500-kV TL that terminate in the BLN switchyard would be reestablished; the ROW would be brought back to current TVA standards; the capacity of nine existing TLs would be increased; and two 161-kV transmission lines that supply a 161-kV switchyard to provide site power would be reestablished (Figure 1); all of these TLs and ROWs are existing.

TVA has determined the area of potential effects (APE) to be the ROW and TLs that are slated for upgrades and the footprint of all infrastructures (e.g., access roads, staging areas). The architectural APE would be a .5 mile wide area linearly centered along the proposed TL ROW.

A review of the Alabama, Tennessee, and Georgia site files identified twenty-five sites previously recorded within the APE. One of these sites (1MG785) is no longer extant. Seven sites (1MG116, 1MG115, 1MG667, 1MG758, 1MG757, 1JA304, 1JA694) were previously determined not eligible for the National Register of Historic Places (NRHP). Two sites, 1MG735 and 9WA164, has been previously determined potentially eligible for the NRHP. The remaining 15 sites (1JA637, 1JA650, 40MI246, 40MI247, 40HA0089, 40MI248, 1JA453, 1JA452, 1JA304, 1JA377, 1JA518, 1JA532, 1JA524, 1JA617, 1JA558) have not been assessed for NRHP eligibility. In Alabama, one previously recorded historic district (the City of Bridgeport) falls within the architectural APE. TVA would seek comments regarding these properties and other yet to be identified properties.

Page 2
March 24, 2010

TVA is preparing three Memoranda of Agreement (MOA) for the phased identification and evaluation of cultural resources within the APE. Because three states are involved in the APE, a separate MOA for phased identification and evaluation will be executed between TVA and each State Historic Preservation Officer (Alabama, Tennessee, and Georgia).

At this time TVA is providing notification of the proposed undertaking to the following tribes: Cherokee Nation, Eastern Band of Cherokee Indians, United Keetoowah Band of Cherokee Indians in Oklahoma, The Chickasaw Nation, Muscogee (Creek) Nation of Oklahoma, Alabama-Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town, Kialegee Tribal Town, Thlopthlocco Tribal Town, Seminole Tribe of Florida, Absentee-Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Shawnee Tribe, Jena Band of Choctaw Indians, and the Poarch Band of Creek Indians. No upgrading or reconductoring for the proposed undertaking is scheduled to begin until 2016.

At this time, TVA is inviting you to participate as a concurring party to the MOA for a phased identification and evaluation of historic properties. Please let me know if you would like to participate as a concurring party; and, if so, for which states. Whether you choose to be a concurring party to this agreement document or not, TVA will consult with you regarding any National Register of Historic Places eligibility evaluations, determinations, and/or historic property treatment plans, should such measures be required.

Should you have any questions, please contact me via phone at 865/632-6461 or via e-mail at pbezzell@tva.gov. Please respond within 30 days of receipt of this letter, if you have any comments on the proposed undertaking.

Sincerely,

Pat Bernard Ezzell

Pat Bernard Ezzell
Native American Liaison and Historian

MH:PBE:IKS
Enclosure
cc: Kimberly Hodges (EDMS), LP 2V-C

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

April 8, 2010

Mr. E. Patrick McIntyre, Jr.
Executive Director
Tennessee Historical Commission
Clover Bottom Mansion
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

MEMORANDUM OF AGREEMENT BETWEEN THE TENNESSEE VALLEY AUTHORITY AND THE TENNESSEE STATE HISTORIC PRESERVATION OFFICER FOR THE TRANSMISSION LINE UPGRADES RELATING TO THE BELLEFONTE NUCLEAR PROJECT

Enclosed for your signature, is one copy of the Memorandum of Agreement (MOA) and three additional signatory pages regarding the proposed Bellefonte Nuclear Project transmission line (TL) upgrades. TVA has consulted with your office and other consulting parties during the development of the MOA. The MOA was prepared for the Bellefonte Nuclear Project Supplemental Environmental Impacts Statement. The MOA is for the phased identification and evaluation of historic properties that may be affected by the proposed TL upgrades to begin in 2016.

Please sign the three additional enclosed signatory pages and return to me. If you have questions, please feel free to contact me at (865) 632-2457.

Sincerely,

Eric Howard

A. Eric Howard
Federal Preservation Officer

MH:IKS
Enclosures
cc: Files, HAPC, WT 11D-K

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION

CHRIS CLARK
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

April 29, 2010

Mr. A. Eric Howard
Federal Preservation Officer
Historic and Archaeological Permitting and Compliance
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1499

Re: Memorandum of Agreement
Upgrade Belfonte Nuclear Transmission lines
Dade and Walker Counties, Georgia
HP-090914-001

Dear Mr. Howard:

The Historic Preservation Division (HPD) has received the Memorandum of Agreement (MOA) for the above referenced project in Dade and Walker Counties, Georgia. Our comments are offered to assist federal agencies in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

As previously stated, HPD concurs that the MOA is adequate to address adverse effects that may be associated with undertaking. Therefore, I have signed this agreement and am returning three (3) additional original signature pages to you for further processing.

If you have any questions, please contact Elizabeth (Betsy) Shirk, Environmental Review Coordinator, at (404) 651-6624.

Sincerely,

Dave Crass

Dr. David Crass
Division Director
Deputy State Historic Preservation Officer

DC/ECS

Enclosure

cc: Richard Yarnell, TVA, wryarnell@tva.gov
Dan Latham, Jr., Northwest Georgia RC
PA File

254 WASHINGTON STREET, SW | GROUND LEVEL | ATLANTA, GEORGIA 30334
404.656.2840 | FAX 404.657.1368 | WWW.GASHPO.ORG